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FIRST BOOK

IN

ARITHMETIC

BY

F. M. WIEMER

PRINCIPAL FIRST DISTRICT SCHOOL, MILWAUKEE, WIS.

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NUMBERS 1 TO 100

NEW YORK ·:· CINCINNATI ·:· CHICAGO
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FIRST BOOK IN ARITH.
E-P 1

PREFACE

THE "First Book in Arithmetic" is designed to cover the work of the first two years in number.

In preparing this book the author has been mindful of the fact that, in order to become proficient in arithmetic, the pupil must be trained in three directions, viz.:

1. To see clearly and understand readily simple mathematical conditions and relations.
2. To express these conditions and relations by means of figures and symbols, and to interpret correctly the meaning of arithmetical statements.
3. To perform, with accuracy and rapidity, the operations indicated by the statements.

For the accomplishment of these ends the following means have been employed:

1. The method followed in this book is decidedly objective. The principle that the senses must furnish the data for all rational knowledge is duly recognized. Hence each new chapter is introduced by object lessons, and, whenever necessary, the problems are illustrated and made clear by simple drawings. The arrangement of numbers into groups and the comparison of different numbers aid in the comprehension of existing relations.

2. From the outset the child is taught to associate the symbolic expression with the conditions to be expressed; for instance, the statement, "4 × 2 ¢ = ?" with the problem, "What is the cost of 4 oranges at 2 cents apiece?" These exercises are given not only for their great disciplinary value, but also as a preparation for shortened processes in factoring, ratios, cancellation, etc. On the other hand, the child is encouraged to supply original problems where only the abstract statements are given.

3. The subject matter has been most carefully graded. There are no gaps or sudden transitions, no discouraging obstacles in the way of progress, but a gradual ascent lead-

494

ing to the discovery of the unknown by means of the known. The great variety of abstract examples affords the practice necessary for securing accuracy and rapidity.

Though most of the work is intended to be oral, much of it may be used with advantage as silent or busy work.

The problems are largely suggestive, and may be amplified wherever necessary.

SUGGESTIONS TO TEACHERS

Before the book is placed in the hands of the pupil, he should be given enough objective work to exercise him in acquiring simple sense judgments, and to familiarize him with the ordinary language and symbols used in elementary arithmetic. In the beginning, each lesson should be supplemented by a number of simple, but interesting, problems.

The following material is recommended for objective work:

(*a*) For illustrative work to be conducted by the teacher: A numeral frame, a number of two-inch cubes and six-inch splints or sticks, and a variety of pictures suggesting number combinations.

(*b*) For busy work by the pupil: Beads, one-inch cubes, pasteboard counters or wooden tablets, two-inch splints, and toy money.

(*c*) For drill work: Numeral cards like those on pp. 7 to 13 and large number charts containing exercises in the fundamental operations.

After a new process has been developed objectively, it should be impressed by the use of dots, lines, squares, etc., as the nearest approach to the abstract idea, and the fact discovered should be thoroughly memorized.

The pupil should be led not only to find out facts for himself, but to employ original devices in the solution of problems.

In all work the teacher should insist that the pupil knows what he is doing and why he is doing it, and should teach him to depend largely upon his own resources.

F. M. WIEMER.

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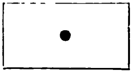
PART FIRST

NUMBERS 1 TO 10

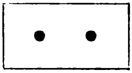
ADDITION AND SUBTRACTION

1.



1.

2.

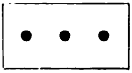


1
1.

1. $1+1=?$ $2-1=?$ $2=1+?$ $2=?+1$

2. Give answers at sight: $\begin{array}{r}1\\1\\\hline\end{array}$ $\begin{array}{r}2\\-1\\\hline\end{array}$

3.



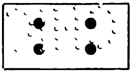
2
1.

3. $2+1=?$ $3-1=?$ $1+2=?$ $3-2=?$
$3=2+?$ $3=1+?$ $1+?=3$ $+?=3$

4. Give answers at sight: $\begin{array}{r}2\\1\\\hline\end{array}$ $\begin{array}{r}1\\2\\\hline\end{array}$ $\begin{array}{r}3\\-1\\\hline\end{array}$ $\begin{array}{r}3\\-2\\\hline\end{array}$

The Combinations

4.



2 3
2, 1.

1. $2 + 2 = ?$ $4 - 2 = ?$ $3 + 1 = ?$ $4 - 1 = ?$
$1 + 3 = ?$ $4 - 3 = ?$ $2 + 1 = ?$ $3 - 2 = ?$

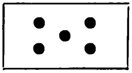
2. Show by counters : $2 + 2$ and $4 - 2$; $3 + 1$ and $4 - 1$; $1 + 3$ and $4 - 3$.

3. Give answers at sight :

$$\begin{array}{ccccccccc} 3 & 1 & 2 & 1 & 1 & 4 & 4 & 4 & 3 \\ \underline{1} & \underline{3} & \underline{2} & \underline{1} & \underline{2} & \underline{-1} & \underline{-2} & \underline{-3} & \underline{-2} \end{array}$$

4. $4 = 3 + ?$ $4 = 1 + ?$ $4 = 2 + ?$
$3 + ? = 4$ $1 + ? = 4$ $2 + ? = 4$

5.



3 4
2, 1.

5. $4 + 1 = ?$ $5 - 1 = ?$ $1 + 4 = ?$ $5 - 4 = ?$
$3 + 2 = ?$ $5 - 2 = ?$ $2 + 3 = ?$ $5 - 3 = ?$

6. Show by counters : $4 + 1$ and $5 - 1$; $1 + 4$ and $5 - 4$; $3 + 2$ and $5 - 2$; $2 + 3$ and $5 - 3$.

7. Give answers at sight :

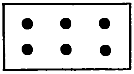
$$\begin{array}{ccccccccc} 4 & 1 & 3 & 3 & 2 & 5 & 5 & 5 & 5 \\ \underline{1} & \underline{4} & \underline{1} & \underline{2} & \underline{3} & \underline{-1} & \underline{-4} & \underline{-2} & \underline{-3} \end{array}$$

8. $5 = 2 + ?$ $5 = 4 + ?$ $5 = 1 + ?$ $4 = 3 + ?$
$5 = 3 + ?$ $4 = 2 + ?$ $4 = 1 + ?$ $3 = 1 + ?$

9. $3 + ? = 5$ $1 + ? = 5$ $2 + ? = 5$ $2 + ? = 4$

The Combinations

6.



3 4 5
3, 2, 1.

1. $3+3=?$ $6-3=?$ $5+1=?$ $6-1=?$
$4+2=?$ $6-2=?$ $2+4=?$ $6-4=?$

2. Show by making rings: $3+3$ and $6-3$; $4+2$ and $2+4$; $6-2$ and $6-4$; $5+1$ and $1+5$; $6-1$ and $6-5$.

3. Add at sight:

3	2	1	3	2	1	5	4	1
3	4	4	2	2	5	1	2	2

4. Subtract at sight:

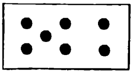
6	6	5	6	6	3	2	6	3
−2	−4	−3	−1	−3	−1	−1	−5	−2

5. $6=5+?$ $6=3+?$ $6=2+?$ $6=1+?$
$6=4+?$ $5=2+?$ $5=1+?$ $4=1+?$

6. $3+?=6$ $2+?=6$ $4+?=6$ $1+?=6$

Note. In learning these combinations, the pupil should cover a part of the dots with a piece of paper. Thus, in learning that '6 is 3+3,' he should cover 3 of the dots, leaving 3 in sight; in learning that '6 is 4+2,' he should cover 2 of the dots, leaving 4 in sight; and so on. As soon as possible, he should name the results without covering the dots. The teacher will do well to prepare or purchase cards with dots as in the illustrations, and illustrate these exercises while holding the cards before the pupils.

The Combinations

7.  $\begin{matrix}4\\3,\end{matrix}$ $\begin{matrix}5\\2,\end{matrix}$ $\begin{matrix}6\\1.\end{matrix}$

1. $6+1=?$ $7-1=?$ $1+6=?$ $7-6=?$
$5+2=?$ $7-2=?$ $2+5=?$ $7-5=?$
$3+4=?$ $7-4=?$ $4+3=?$ $7-3=?$

2. Show by counters: $7-1$ and $7-6$; $6+1$ and $1+6$; $5+2$ and $2+5$; $7-2$ and $7-5$; $3+4$ and $7-4$; $4+3$ and $7-3$.

3. Add quickly:

$$\begin{array}{ccccccccc}5&4&3&2&3&2&2&1&2\\2&3&3&2&4&5&3&6&4\\\hline\end{array}$$

$$\begin{array}{ccccccccc}1&1&3&1&2&1&3&4&4\\2&4&1&1&1&3&2&2&1\\\hline\end{array}$$

4. Subtract at sight:

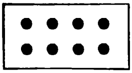
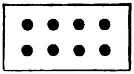
$$\begin{array}{ccccccccc}7&7&7&6&5&7&4&5&7\\-1&-3&-5&-2&-3&-4&-3&-4&-2\\\hline\end{array}$$

$$\begin{array}{ccccccccc}6&3&7&6&6&5&5&4&4\\-4&-1&-6&-3&-5&-2&-1&-2&-3\\\hline\end{array}$$

5. $7=2+?$ $7=6+?$ $7=4+?$ $7=1+?$
$7=5+?$ $7=3+?$ $6=3+?$ $5=2+?$
$3=1+?$ $6=2+?$ $4=3+?$ $2=1+?$

6. $5+?=7$ $4+?=7$ $6+?=7$ $2+?=7$

The Combinations

 $8, \begin{matrix}4\\4,\end{matrix} \begin{matrix}5\\3,\end{matrix} \begin{matrix}6\\2,\end{matrix} \begin{matrix}7\\1,\end{matrix}$ 

1. $4+4=?$ $8-4=?$ $6+2=?$ $8-2=?$
$2+6=?$ $8-6=?$ $7+1=?$ $8-1=?$
$3+5=?$ $8-7=?$ $5+3=?$ $8-3=?$
$8-5=?$ $1+7=?$

2. Show by dots: $8=6+?$ $8=4+?$ $8=5+?$ $8=1+?$ $8-3$ and $8-5$; $8-1$ and $8-7$; $8-6$ and $8-2$; $4+4$ and $8-4$.

3. Tell at sight:

$$\begin{array}{ccccccccc}4&3&4&5&6&1&3&2&1\\ \underline{4}&\underline{4}&\underline{3}&\underline{3}&\underline{2}&\underline{6}&\underline{5}&\underline{5}&\underline{7}\end{array}$$

$$\begin{array}{ccccccccc}2&7&2&5&2&3&2&1&5\\ \underline{6}&\underline{1}&\underline{4}&\underline{1}&\underline{3}&\underline{3}&\underline{2}&\underline{1}&\underline{2}\end{array}$$

4. Subtract at sight:

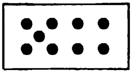
$$\begin{array}{ccccccccc}8&7&5&8&8&8&8&8&8\\ \underline{-6}&\underline{-4}&\underline{-3}&\underline{-4}&\underline{-2}&\underline{-1}&\underline{-3}&\underline{-7}&\underline{-5}\end{array}$$

5. $8=7+?$ $8=5+?$ $8=3+?$ $8=4+?$
$8=2+?$ $8=6+?$ $8=1+?$ $7=2+?$
$7=3+?$ $6=4+?$ $5=2+?$ $5=1+?$

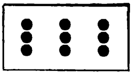
6. $4+?=8$ $2+?=8$ $3+?=8$ $1+?=8$

7. $3+?=7$ $1+?=7$ $4+?=5$ $2+?=5$

The Combinations



$9,\ \substack{5\\4},\ \substack{6\\3},\ \substack{7\\2},\ \substack{8\\1}.$



1. 5 + 4 = ?   9 − 4 = ?   4 + 5 = ?   9 − 5 = ?
8 + 1 = ?   9 − 1 = ?   1 + 8 = ?   9 − 8 = ?
7 + 2 = ?   9 − 2 = ?   2 + 7 = ?   9 − 7 = ?
6 + 3 = ?   9 − 3 = ?   3 + 6 = ?   9 − 6 = ?

2. In the picture of number '9' show that: 9 = 8 + 1; 9 = 7 + 2; 9 = 5 + 4; 9 = 6 + 3.

3. Add at sight:

$$\begin{array}{ccccccccc} 4 & 8 & 4 & 6 & 5 & 2 & 5 & 6 & 7 \\ \underline{5} & \underline{1} & \underline{4} & \underline{1} & \underline{3} & \underline{5} & \underline{4} & \underline{2} & \underline{2} \end{array}$$

$$\begin{array}{ccccccccc} 3 & 2 & 2 & 3 & 1 & 4 & 2 & 1 & 4 \\ \underline{5} & \underline{4} & \underline{7} & \underline{6} & \underline{8} & \underline{3} & \underline{7} & \underline{6} & \underline{2} \end{array}$$

4. Subtract at sight:

$$\begin{array}{ccccccccc} 9 & 5 & 9 & 8 & 5 & 9 & 9 & 7 & 8 \\ \underline{-4} & \underline{-4} & \underline{-7} & \underline{-4} & \underline{-3} & \underline{-6} & \underline{-3} & \underline{-5} & \underline{-3} \end{array}$$

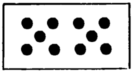
$$\begin{array}{ccccccccc} 6 & 9 & 4 & 9 & 8 & 7 & 9 & 6 & 4 \\ \underline{-4} & \underline{-4} & \underline{-1} & \underline{-2} & \underline{-5} & \underline{-3} & \underline{-8} & \underline{-5} & \underline{-3} \end{array}$$

5. 9 = 5 + ?   9 = 8 + ?   9 = 2 + ?   9 = 1 + ?
9 = 3 + ?   9 = 6 + ?   9 = 4 + ?   9 = 7 + ?
8 = 3 + ?   7 = 2 + ?   6 = 4 + ?   5 = 2 + ?

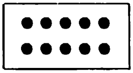
6. 5 + ? = 9   3 + ? = 9   4 + ? = 9   2 + ? = 9
6 + ? = 9   7 + ? = 9   1 + ? = 9   8 + ? = 9

8 = 3 more than ?   7 = 2 more than ?

The Combinations



10, $\overset{5}{5}$, $\overset{6}{4}$, $\overset{7}{3}$, $\overset{8}{2}$, $\overset{9}{1}$.



1. 5 + 5 = ?
1 + 9 = ?
3 + 7 = ?
2 + 8 = ?

10 − 5 = ?
10 − 9 = ?
10 − 7 = ?
10 − 8 = ?
10 − 6 = ?

9 + 1 = ?
7 + 3 = ?
8 + 2 = ?
6 + 4 = ?
4 + 6 = ?

10 − 1 = ?
10 − 3 = ?
10 − 2 = ?
10 − 4 = ?

2. Take 10 counters and tell as many stories about 10 as you can.

3. Give answers rapidly :

5	3	2	9	4	6	4	3	7
5	6	8	1	4	4	5	7	3

10	9	10	10	8	10	9	10	7
−6	−5	−8	−4	−6	−3	−4	−1	−4

10	10	10	8	10	7	8	9	8
−9	−2	−7	−3	−5	−6	−4	−7	−5

4. 10 = 6 + ?
9 = 3 + ?

8 = 3 + ?
10 = 2 + ?

10 = 4 + ?
6 = 2 + ?

7 = 3 + ?
10 = 7 + ?

5. 5 + ? = 10
4 + ? = 10

6 + ? = 10
1 + ? = 10

3 + ? = 10
7 + ? = 10

2 + ? = 10
8 + ? = 10

0.

6. 2 − 2 = ?
7 − 7 = ?

4 − 4 = ?
3 − 3 = ?
1 − 1 = ?

6 − 6 = ?
10 − 10 = ?
9 − 9 = ?

8 − 8 = ?
5 − 5 = ?

Review of the Combinations

J	1								
H	2	1							
G	3	1	2						
F	1	2	4	3					
E	3	5	1	2	4				
D	2	3	4	5	1	6			
C	5	4	1	3	7	2	6		
B	8	1	5	6	2	4	7	3	
A	6	2	7	1	5	8	3	9	4

1. To each number in row : A add 1 ; B add 2 ; C add 3 ; D add 4 ; E add 5 ; F add 6 ; G add 7 ; H add 8 ; J add 9.

K	10									
J	10	9								
H	8	9	10							
G	10	7	8	9						
F	9	8	10	7	6					
E	7	5	6	9	10	8				
D	8	4	7	10	9	6	5			
C	9	6	3	8	7	5	10	4		
B	6	2	9	5	10	4	7	8	3	
A	3	7	1	4	8	2	9	6	5	10

2. From each number in row : A take 1 ; B take 2 ; C take 3 ; D take 4 ; E take 5 ; F take 6 ; G take 7 ; H take 8 ; J take 9 ; K take 10.

3. 10 = 2 + ? 9 = 3 + ? 6 = 5 + ? 9 = 7 + ?

4. 5 = 3 + ? 8 = 3 + ? 10 = 3 + ? 8 = 1 + ?

5. 6 = 4 + ? 2 = 1 + ? 10 = 9 + ? 3 = 1 + ?

6. 4 = 1 + ? 5 = 2 + ? 4 = 3 + ? 7 = 1 + ?

Review of the Combinations

1. $9 = 4 + ?$
$6 = 2 + ?$
$7 = 3 + ?$
$3 = 2 + ?$
$7 = 5 + ?$
$10 = 1 + ?$
$9 = 1 + ?$
$6 = 1 + ?$
$8 = 5 + ?$
$9 = 6 + ?$
$7 = 2 + ?$
$7 = 4 + ?$
$5 = 4 + ?$
$8 = 2 + ?$
$8 = 7 + ?$
$9 = 2 + ?$

2. $6 + ? = 8$
$4 + ? = 7$
$3 + ? = 6$
$5 + ? = 9$
$8 + ? = 9$
$2 + ? = 4$
$4 + ? = 8$
$5 + ? = 10$
$1 + ? = 5$
$6 + ? = 7$
$2 + ? = 9$
$6 + ? = 7$
$6 + ? = 10$
$7 + ? = 10$
$8 + ? = 10$
$3 + ? = 8$

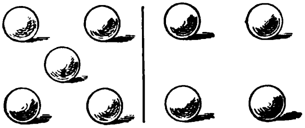
Add at sight:

	2	2	5	1	3	2	2	8	6
3.	6	5	5	4	5	2	4	1	1
	5	4	5	4	3	7	3	2	1
4.	2	6	4	3	4	2	1	3	8
	1	1	1	3	2	5	1	2	7
5.	3	6	5	7	7	3	7	8	3

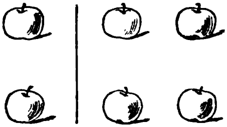
Subtract at sight:

	10	5	3	5	8	10	8	3	7
6.	−2	−1	−3	−4	−4	−7	−2	−1	−6
	9	4	8	9	4	9	10	7	6
7.	−6	−1	−8	−8	−2	−4	−9	−3	−5
	7	9	8	8	10	2	10	9	7
8.	−1	−2	−5	−1	−4	−1	−8	−4	−3

Problems



Picture for Ex. 1.



Picture for Ex. 2.

1. John had 5 marbles and found 4 more. Draw the picture as above. How many did he have then? $5 + 4 = ?$

2. I have 2 apples in my pocket and 4 more at home. Draw the picture as above. How many apples have I? $2 + 4 = ?$

3. May bought 3 oranges yesterday and 3 to-day. How many did she buy in all? Draw the picture.

4. There were 4 birds in one nest and 3 in another. How many were in both? Draw the picture.

5. There are 2 roses on one stem and 3 on another. How many roses are on both stems? Draw the picture.

6. A boy buys a book for 7 cents and a pencil for 2 cents. How many cents must he pay? Draw the picture.

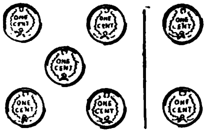
7. Emma found 6 nuts under one tree and 3 under another. How many nuts did she find? Draw the picture.

8. If you save 8 cents and your grandma gives you 1 more, how many cents will you have? Draw the picture.

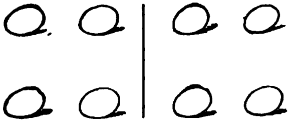
9. Uncle Ben has 4 boys and 4 girls. How many children has he? Draw the picture.

10. Seven chickens were feeding, and 3 were running about. How many chickens were there? Draw the picture.

Problems



Picture for Ex. 1.



Picture for Ex. 2.

1. Willie had 7 cents in his safe. He took out 2. Draw the picture as above. How many were left? $7 - 2 = ?$

2. Mamma had 8 eggs, but gave away 4. Draw the picture as above. How many did she have left? $8 - 4 = ?$

3. Ned had 5 chickens. The cat killed 2. How many did he have left? Draw the picture.

4. There were 9 sheep in the field. 6 of them jumped out. How many were left? Draw the picture.

5. I bought 4 oranges and gave 1 to my sister. How many did I keep for myself? Draw the picture.

6. Nellie got 3 pieces of candy in the morning. At recess she ate 3. How many did she have left? Draw the picture.

7. Ten children are sitting in a row. Four of them are boys. How many are girls?

8. A rosebush had 8 roses. Five dropped off. How many were left on the bush?

9. A man earns 9 dollars and spends 4 dollars. How many dollars does he save?

10. Helen had 10 pigeons. One morning she found 3 dead. How many were alive?

Problems

3 roses + 5 roses = 8 roses. Statement of Ex. 1.

7 dots − 3 dots = 4 dots. Statement of Ex. 2.

1. Kate picked 3 roses from one bush and 5 from another. Make the statement as above. How many roses did she pick from both?

2. If you make 7 dots and rub out 3, how many will be left? Make the statement as above.

3. There are 2 cows in one field and 6 in another. How many cows are there in both fields? Make the statement.

4. I have 6 cents. How many more must I save so as to have 10 cents? Make the statement.

5. James got 10 pens from his father. He gave his sister 2. How many did he keep for himself? Make the statement.

6. There were 6 frogs in a pond. Two more jumped in. How many were there then?

7. There are 7 days in a week. 5 are school days. On how many days of the week is there no school?

8. Mary ate 2 cakes on Sunday and 2 on Monday. How many did she eat on both days?

9. Henry cut out 6 pictures from one book and 4 from another. How many pictures did he cut out in all?

10. Lucy had 8 pears. She gave 3 to her brother and put the others away. How many did she put away?

Make stories about:

4 + 2 = ? 9 − 7 = ? 5 + 5 = ? 3 − 1 = ?
8 − 6 = ? 3 + 5 = ? 10 − 1 = ? 7 + 3 = ?

MULTIPLICATION AND DIVISION

ORAL AND WRITTEN

Ones

● 1 1 = 1, or 1 × 1 = 1
● 2 1's = 2, or 2 × 1 = 2
● 3 1's = 3, or 3 × 1 = 3
● 4 1's = 4, or 4 × 1 = 4
● 5 1's = 5, or 5 × 1 = 5
● 6 1's = 6, or 6 × 1 = 6
● 7 1's = 7, or 7 × 1 = 7
● 8 1's = 8, or 8 × 1 = 8
● 9 1's = 9, or 9 × 1 = 9
● 10 1's = 10, or 10 × 1 = 10

1. 2 1's = ? 3 1's = ? 4 1's = ? 9 1's = ?
2 × 1 = ? 3 × 1 = ? 4 × 1 = ? 9 × 1 = ?

2. How many ones are there in 5? In 7? In 4? In 10? In 3? In 6?

Note. The pupil should count all the dots from the beginning together with the dot on the line which he is reading. Thus, he reads "4 1's = 4, or 4 times 1 = 4," and counts from the beginning the 4 dots.

Twos and Threes

● ●	1	2,	or	1 × 2 = 2
● ●	2	2's,	or	2 × 2 = 4
● ●	3	2's,	or	3 × 2 = 6
● ●	4	2's,	or	4 × 2 = 8
● ●	5	2's,	or	5 × 2 = 10

1. 1 2 = ? 2 2's = ? 3 2's = ? 4 2's = ? 5 2's = ?

2. 2 × 2 = ? 1 × 2 = ? 5 × 2 = ? 4 × 2 = ?
3 × 2 = ? 3 × 1 = ? 5 × 1 = ? 8 × 1 = ?

3. 6 = ? 2's 8 = ? 2's 10 = ? 2's 4 = ? 2's

4. How many: 2's in 8? 2's in 10? 2's in 4? 2's in 6?

5. 4 ÷ 2 = ? 8 ÷ 2 = ? 6 ÷ 2 = ? 10 ÷ 2 = ?
2 ÷ 2 = ? 5 ÷ 1 = ? 8 ÷ 1 = ? 6 ÷ 1 = ?

6. Show by counters: 4 ones; 3 twos; 2 twos; 5 twos.

7. Show by dots: 2's in 4; 2's in 10; 2's in 8; 1's in 4.

● ● ●	1	3,	or	1 × 3 = 3
● ● ●	2	3's,	or	2 × 3 = 6
● ● ●	3	3's,	or	3 × 3 = 9

1. 1 3 = ? 2 3's = ? 3 3's = ? 2 × 3 = ? 1 × 3 = ? 3 × 3 = ? 4 × 2 = ? 5 × 2 = ?

2. 6 = ? 3's 9 = ? 3's 8 = ? 2's 6 = ? 2's

3. How many: 3's make 9? 3's make 6? 3's make 3?

4. 9 ÷ 3 = ? 6 ÷ 3 = ? 3 ÷ 3 = ? 10 ÷ 2 = ?

5. Show by counters: 3 × 2 and 2 × 3; 1 three and 3 ones.

6. Show by splints: 6 ÷ 3; 9 ÷ 3; 6 ÷ 2; 4 ÷ 2.

Fours and Fives

● ● ● ● 1 4 = 4, or $1 \times 4 = 4$
● ● ● ● 2 4's = 8, or $2 \times 4 = 8$

1. $1 \times 4 = ?$ $2 \times 4 = ?$ $4 \times 2 = ?$ $3 \times 3 = ?$

2. 8 = ? fours 4 = ? twos 6 = ? threes 6 = ? twos

3. $? \times 4 = 8$ $? \times 3 = 9$ $? \times 4 = 4$ $? \times 2 = 10$

4. $8 \div 4 = ?$ $8 \div 2 = ?$ $6 \div 3 = ?$ $6 \div 2 = ?$
$10 \div 2 = ?$ $9 \div 3 = ?$ $4 \div 2 = ?$ $9 \div 1 = ?$

5. Draw stars showing: 2×4 and 4×2; 4×1 and 1×4.

6. Make rings showing: 4's in 8; 2's in 8; 3's in 9; 1's in 8.

● ● ● ● ● 1 5, or $1 \times 5 = 5$
● ● ● ● ● 2 5's, or $2 \times 5 = 10$

1. $1 \times 5 = ?$ $2 \times 5 = ?$ $2 \times 4 = ?$ $3 \times 3 = ?$

2. $10 = ? \times 5$ $5 = ? \times 5$ $8 = ? \times 4$ $6 = ? \times 3$
$4 = ? \times 2$ $8 = ? \times 2$ $6 = ? \times 2$ $5 = ? \times 1$

3. $5 \div 5 = ?$ $10 \div 5 = ?$ $8 \div 4 = ?$ $6 \div 3 = ?$
$6 \div 2 = ?$ $8 \div 2 = ?$ $10 \div 2 = ?$ $4 \div 4 = ?$

4. Make marks showing: 2×5; 3×2; 2×4; 1×3.

5. Show by squares: 5's in 5; 5's in 10; 4's in 8; 2's in 10.

Miscellaneous

1. Take counters and show that:

$1 \times 2 = 2 \times 1$ $5 \times 2 = 2 \times 5$

$3 \times 2 = 2 \times 3$ $1 \times 3 = 3 \times 1$

$4 \times 2 = 2 \times 4$ $1 \times 5 = 5 \times 1$

2. What is:

$\frac{1}{2}$ of 2? of 4? of 6? $\frac{1}{4}$ of 4? $\frac{1}{4}$ of 8?

$\frac{1}{2}$ of 8? $\frac{1}{2}$ of 10? $\frac{1}{5}$ of 5? $\frac{1}{5}$ of 10?

$\frac{1}{3}$ of 3? of 6? of 9?

3. State the value of '?':

$2 \times 2 + 1 = ?$ $4 \times 2 + 1 = ?$ $3 \times 2 + 1 = ?$ $1 \times 3 + 2 = ?$

$2 \times 3 + 2 = ?$ $3 \times 3 + 1 = ?$ $2 \times 4 + 2 = ?$ $1 \times 4 + 3 = ?$

$1 \times 5 + 4 = ?$ $1 \times 6 + 3 = ?$ $1 \times 7 + 2 = ?$ $1 \times 8 + 1 = ?$

4. Show by rings:

2's in 5; 2's in 7 2's in 9; 3's in 8

3's in 10; 4's in 9 5's in 7; 4's in 6

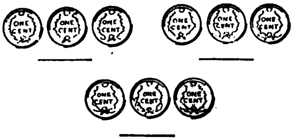
5. How many:

2's in 5? *Ans.* 2 2's and 1 4's in 5? In 7? In 9?

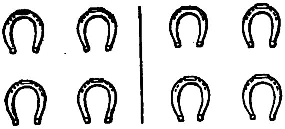
2's in 3? In 7? In 9? 5's in 6? In 8? In 9?

3's in 4? In 8? In 10? 6's in 7? In 8? In 10?

Problems



Picture for Ex. 1.



Picture for Ex. 2.

1. If one pencil costs 3 cents, how much will 3 pencils cost? 3 × 3 cents = ? Draw the picture.

2. How many horseshoes does it take to shoe 2 horses? 2 × 4 horseshoes = ? Draw the picture.

3. How much will 4 oranges cost at 2 cents apiece? Draw the picture.

4. I have 4 pockets and a penny in each of them. How many pennies have I?

5. John has 3 pairs of shoes. How many shoes has he? Draw the picture.

6. There are 3 trees in front of our house and just as many behind it. How many trees are there in all?

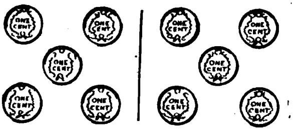
7. You have 5 fingers on each hand. How many on both?

8. How many feet do 5 children have?

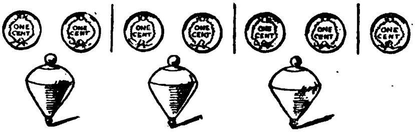
9. How many hands do 2 boys have?

10. May spends 1 cent every day. How much money does she spend in 8 days?

Problems



Picture for Ex. 1.



Picture for Ex. 2.

1. Two whistles cost 10 cents. How much does one whistle cost? Draw the picture. One half of 10 cents = ?

2. At 2 cents apiece, how many tops can you buy for 7 cents? Draw the picture. 7 cents = ? × 2 cents + ?

3. A man divided 9 oranges among his 3 children, giving the same number to each. How many did each child get? Draw the picture.

4. Fannie knit 8 stockings. How many pairs of stockings did she knit?

5. How many 2-cent stamps can you buy for 10 cents? Draw the picture.

6. Ned has 6 rabbits. How many times can he give away 2 rabbits to his friends?

7. James and Fred found 8 apples under an apple tree. How many apples should each have, to share equally?

8. At 5 cents a loaf, how many loaves of bread can you buy for 10 cents?

9. If a stick of candy costs 1 cent, how many sticks of candy can you buy for 4 cents?

10. At 3 cents apiece, how many cakes should you get for 6 cents?

Problems

1. A wagon has 4 wheels. How many wheels do 2 wagons have?

2. If one ride on a street car costs 3 cents, how many times can you ride for 6 cents?

3. If there are 3 cherries on one bunch, how many cherries are there on 3 such bunches?

4. Charles had 10 marbles. He lost one half of them. How many had he left?

5. Frank is 6 years old. His sister is 3 years younger. How old is she?

6. Last year we planted 8 trees. Two of them died. How many are alive?

7. A postal card costs 1 cent. How many can you buy for 5 cents?

8. How many peaches at 2 cents apiece can you buy for 9 cents?

9. How much do 4 blank books cost at 2 cents each?

10. Clara has 3 dolls, and Susie has 4. How many dolls have they together?

Make problems about:

$2 \times 5 = ?$	$3 \times 2 = ?$	$3 \times 3 = ?$	$\frac{1}{2}$ of $8 = ?$
$? \times 2 = 4$	$6 \div 2 = ?$	$8 \div 4 = ?$	$\frac{1}{3}$ of $6 = ?$

MEASURES

United States Money

5 cents = 1 nickel
10 cents = 1 dime

1. How many cents must you have so that you can change a nickel?

2. How many cents are worth as much as one dime?

3. Elsie has a dime and buys a pound of sugar for 4 cents. How much must she bring back? What coins?

4. How can you change a dime?

5. Which is the more, 2 nickels or 1 dime?

6. John bought a loaf of bread for 8 cents and paid for it with a dime. How much change should he have received?

7. In my safe I have 1 nickel and 3 cents. How much money have I?

Liquid Measure

2 pints = 1 quart
4 quarts = 1 gallon

1. How many pints does a quart measure hold?

2. How many quarts does a gallon measure hold?

3. How many pints does a gallon measure hold?

4. How much does a teacup hold? A table glass?

5. A pint of milk costs 2 cents. How much does a quart cost? How many quarts at that price can you buy for 8 cents?

6. At 2 cents a quart, how much will a gallon of kerosene cost?

7. With a gallon of oil, how many quart bottles can you fill?

8. Which is the more, 7 quarts or 2 gallons? How much more?

9. In a 2-gallon jug there are 6 quarts of wine. How much more must you pour in to fill the jug?

10. At 6 cents a quart, how much does a pint of milk cost? How much do a quart and a pint cost?

Dry Measure

4 pecks = 1 bushel

1. How many pecks are there in 1 bushel? In 2 bushels?

2. If there are 6 pecks of potatoes in a sack, how many bushels and how many pecks are there?

3. Henry's father bought a bushel of oats and gave 1 peck to a friend. How many pecks did he have left?

4. I have 2 pecks of apples. How many more must I get so as to have a bushel?

5. If we eat 1 bushel of potatoes in 4 weeks, how many pecks do we eat in 1 week?

6. We bought 2 bushels of peaches and gave 1 peck away. How many pecks did we keep for ourselves?

7. If you gather a peck of nuts every day, in how many days will you gather 1 bushel? 2 bushels?

8. How many pecks of beets will fill a half-bushel basket?

9. John's horses eat 3 pecks of oats in a week. How much do they eat in 3 weeks?

Long Measure

3 feet = 1 yard

1. Draw a line 1 foot long.

2. From a string, cut off a piece 3 feet long.

3. How many feet tall are you?

4. How high is your teacher's desk? The blackboard?

5. A table is 2 feet each way. How many feet does it measure all around? How many yards and how many feet?

6. Emma has 1 yard of cloth with which to dress her 3 dolls. How much must she use for 1 doll, if she uses the same amount for each?

7. From a piece of cloth 2 yards long a piece 1 foot long was cut off. How much was left?

8. A room is 9 feet wide. How many yards wide is it?

9. At 2 cents a foot, how much will 1 yard of rubber cost?

10. If you sew together two ribbons, one 4 yards long, and the other 5 yards long, how long a ribbon will you have?

Time Measure

7 days = 1 week

1. How many days are there in a week? Name them. Which of these are working days? How many? Which are school days? How many?

2. Which is the first day of the week? Which is the seventh? Which is the third? Which day of the week is Monday? Which day of the week is Friday?

3. If a man earns 2 dollars a day, how much does he earn in 3 days? How much in 4 days? In 5 days?

4. John received 2 cents from his father on Saturday and 4 cents on Sunday. How many cents did he receive in all?

5. At 2 dollars a day, in how many days can a man earn 10 dollars?

6. John earned 1 dollar on Monday, 2 dollars on Tuesday, and 3 dollars on Wednesday. How much did he earn in all?

7. Last week Henry worked only half of the time. How many days did he work?

8. If you learn 2 new words every day, how many do you learn in 4 days?

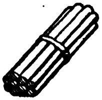
9. Ella was in school only 3 days last week. How many days was she absent?

Papa was away from home 2 days last week. How days was he at home?

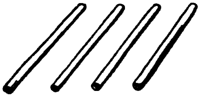
PART SECOND

NUMBERS 1 TO 20

ADDITION AND SUBTRACTION



10 ones or 1 ten



4 ones

1. How many splints are in the bundle? How many single splints do you see besides? How many splints are there in all?

2. Find the value of '?'; use splints.

10 + 1 = ?
10 + 2 = ?
10 + 3 = ?
10 + 4 = ?
10 + 5 = ?

10 + 6 = ?
10 + 7 = ?
10 + 8 = ?
10 + 9 = ?
10 + 10 = ?

4 + 10 = ?
7 + 10 = ?
9 + 10 = ?
5 + 10 = ?
8 + 10 = ?

6 + 10 = ?
3 + 10 = ?
1 + 10 = ?
2 + 10 = ?
10 + 10 = ?

3. Count from 1 to 20.

4. Count from 20 back to 1.

Oral Work

1.

10 + 1 = ?
11 + 1 = ?
12 + 1 = ?
13 + 1 = ?
14 + 1 = ?
15 + 1 = ?
16 + 1 = ?
17 + 1 = ?
18 + 1 = ?
19 + 1 = ?

2.

20 – 1 = ?
19 – 1 = ?
18 – 1 = ?
17 – 1 = ?
16 – 1 = ?
15 – 1 = ?
14 – 1 = ?
13 – 1 = ?
12 – 1 = ?
11 – 1 = ?

3.

14 + 1 = ?
19 + 1 = ?
13 + 1 = ?
17 + 1 = ?
15 + 1 = ?
11 + 1 = ?
18 + 1 = ?
10 + 1 = ?
12 + 1 = ?
16 + 1 = ?

4.

19 – 1 = ?
15 – 1 = ?
11 – 1 = ?
18 – 1 = ?
13 – 1 = ?
20 – 1 = ?
14 – 1 = ?
16 – 1 = ?
12 – 1 = ?
17 – 1 = ?

5.

12 = 10 + ?
16 = 10 + ?
18 = 10 + ?
11 = 10 + ?
14 = 10 + ?
17 = 10 + ?
13 = 10 + ?
19 = 10 + ?
15 = 10 + ?

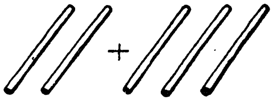
6.

19 = 10 more than ?
17 = 10 more than ?
15 = 10 more than ?
13 = 10 more than ?
12 = 10 more than ?
18 = 10 more than ?
11 = 10 more than ?
14 = 10 more than ?
16 = 10 more than ?

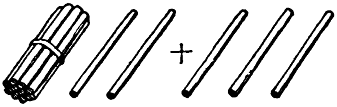
7.

16 – 6 = ?
13 – 3 = ?
15 – 5 = ?
19 – 9 = ?
11 – 1 = ?
14 – 4 = ?
17 – 7 = ?
12 – 2 = ?
18 – 8 = ?

Oral Work



$2 + 3$



$12 + 3$

Show by splints:

1.

$2 + 3$ and $12 + 3$

$4 + 2$ and $14 + 2$

$1 + 6$ and $11 + 6$

$5 + 3$ and $15 + 3$

$3 + 6$ and $13 + 6$

2.

$5 - 3$ and $15 - 3$

$9 - 2$ and $19 - 2$

$6 - 1$ and $16 - 1$

$7 - 4$ and $17 - 4$

$8 - 7$ and $18 - 7$

Give answers rapidly:

3.

$13 + 3 = ?$
$13 + 4 = ?$
$15 + 3 = ?$
$18 + 1 = ?$
$14 + 5 = ?$
$12 + 3 = ?$
$16 + 2 = ?$
$13 + 5 = ?$
$17 + 2 = ?$

4.

$3 + 14 = ?$
$2 + 15 = ?$
$4 + 13 = ?$
$1 + 12 = ?$
$2 + 17 = ?$
$1 + 18 = ?$
$6 + 11 = ?$
$4 + 14 = ?$
$7 + 12 = ?$

5.

$16 - 2 = ?$
$14 - 2 = ?$
$17 - 5 = ?$
$20 - 5 = ?$
$13 - 1 = ?$
$16 - 3 = ?$
$18 - 5 = ?$
$14 - 3 = ?$
$13 - 2 = ?$

6.

$18 - 4 = ?$
$19 - 4 = ?$
$20 - 7 = ?$
$15 - 4 = ?$
$17 - 1 = ?$
$19 - 3 = ?$
$12 - 1 = ?$
$16 - 4 = ?$
$17 - 3 = ?$

Oral Work

1. Show by splints that 16 – 13 is the same as 6 – 3.
2. Show by splints that 17 – 11 is the same as 7 – 1.

Find the value of '?' :

3.

13 – 12 = ?
18 – 15 = ?
14 – 11 = ?
19 – 15 = ?
15 – 12 = ?

4.

17 – 13 = ?
18 – 16 = ?
15 – 13 = ?
16 – 14 = ?
19 – 14 = ?

5.

13 – 11 = ?
17 – 15 = ?
19 – 16 = ?
14 – 12 = ?
18 – 13 = ?

6.

17 – 12 = ?
19 – 13 = ?
18 – 12 = ?
15 – 11 = ?
16 – 12 = ?

Find the value of '?' :

7.

9 + ? = 10
5 + ? = 10
3 + ? = 10
6 + ? = 10
1 + ? = 10
4 + ? = 10
7 + ? = 10
2 + ? = 10
8 + ? = 10

8.

10 – 5 = ?
10 – 3 = ?
10 – 8 = ?
10 – 1 = ?
10 – 4 = ?
10 – 7 = ?
10 – 2 = ?
10 – 6 = ?
10 – 9 = ?

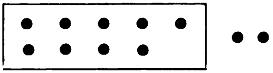
9.

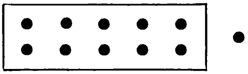
9 = 3 + ?
9 = 5 + ?
9 = 7 + ?
9 = 4 + ?
9 = 6 + ?
8 = 4 + ?
8 = 6 + ?
8 = 5 + ?
8 = 3 + ?

10.

7 = 1 + ?
7 = 3 + ?
7 = 4 + ?
6 = 3 + ?
6 = 1 + ?
6 = 2 + ?
5 = 1 + ?
5 = 2 + ?
4 = 1 + ?

Oral Work — Nines, Eights, and Sevens





1. $9 + 2 = ?$ *Ans.* $9 + 1 = 10$; $10 + 1 = 11$.

2. $11 - 2 = ?$ *Ans.* $11 - 1 = 10$; $10 - 1 = 9$.

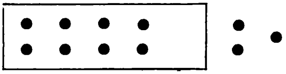
3. Add :

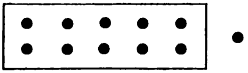
$9 + 4$ $9 + 2$
$9 + 5$ $9 + 6$
$9 + 8$ $9 + 3$
$9 + 7$ $9 + 9$

4. Subtract :

$11 - 3$ $11 - 6$
$11 - 5$ $11 - 8$
$11 - 2$ $11 - 7$
$11 - 4$ $11 - 9$

NOTE. — The pupil should memorize the results as soon as possible.





5. $8 + 3 = ?$ *Ans.* $8 + 2 = 10$; $10 + 1 = 11$.

6. $12 - 3 = ?$ *Ans.* $12 - 2 = 10$; $10 - 1 = 9$.

7. Add :

$8 + 4$ $8 + 7$
$8 + 6$ $8 + 5$
$8 + 9$ $8 + 8$

8. Subtract :

$12 - 4$ $12 - 6$
$12 - 8$ $12 - 9$
$12 - 5$ $12 - 7$

9. Add :

$7 + 4$ $7 + 5$
$7 + 6$ $7 + 8$
$7 + 7$ $7 + 9$

10. Subtract :

$13 - 4$ $13 - 6$
$13 - 7$ $13 - 8$
$13 - 5$ $13 - 9$

Oral Work — Sixes and Lower Numbers

1. Find the value :

6 + 5
6 + 7
6 + 8
5 + 6
5 + 9
4 + 7
3 + 9

14 − 5
14 − 8
14 − 7
17 − 9
15 − 6
16 − 8
15 − 8

6 + 9
5 + 8
6 + 6
4 + 9
5 + 7
4 + 8
2 + 9

14 − 6
16 − 7
15 − 9
14 − 9
17 − 8
18 − 9
15 − 7

2. Find the value :

$\left.\begin{matrix}8+9\\9+8\end{matrix}\right\}$
$\left.\begin{matrix}7+9\\9+7\end{matrix}\right\}$
$\left.\begin{matrix}7+8\\8+7\end{matrix}\right\}$

$\left.\begin{matrix}6+8\\8+6\end{matrix}\right\}$
$\left.\begin{matrix}6+9\\9+6\end{matrix}\right\}$
$\left.\begin{matrix}5+9\\9+5\end{matrix}\right\}$

$\left.\begin{matrix}5+8\\8+5\end{matrix}\right\}$
$\left.\begin{matrix}4+9\\9+4\end{matrix}\right\}$
$\left.\begin{matrix}4+8\\8+4\end{matrix}\right\}$

$\left.\begin{matrix}3+8\\8+3\end{matrix}\right\}$
$\left.\begin{matrix}2+9\\9+2\end{matrix}\right\}$
$\left.\begin{matrix}1+9\\9+1\end{matrix}\right\}$

3. Find the value :

7 + 10
7 + 9
6 + 10
6 + 9
8 + 10
8 + 9
5 + 10
5 + 9

3 + 9
4 + 9
6 + 10
6 + 8
5 + 10
5 + 8
7 + 10
7 + 8

8 + 10
8 + 8
4 + 8
3 + 8
6 + 6
6 + 7
6 + 5
1 + 9

7 + 7
7 + 8
7 + 6
8 + 8
8 + 9
8 + 7
9 + 8
3 + 9

Oral Work — Review

11, $\overset{6}{5}$, $\overset{7}{4}$, $\overset{8}{3}$; **12,** $\overset{6}{6}$, $\overset{7}{5}$, $\overset{8}{4}$, $\overset{9}{3}$; **13,** $\overset{7}{6}$, $\overset{8}{5}$, $\overset{9}{4}$;

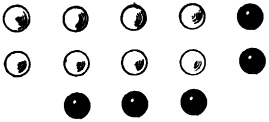
14, $\overset{7}{7}$, $\overset{8}{6}$, $\overset{9}{5}$; **15,** $\overset{8}{7}$, $\overset{9}{6}$; **16,** $\overset{8}{8}$, $\overset{9}{7}$,; **17,** $\overset{9}{8}$; **18,** $\overset{9}{9}$.

	L	M	N	O	P	Q	R	S	T	U
A	6	3	9	5	2	7	10	4	8	11
B	10	7	3	9	6	4	8	11	5	12
C	8	9	6	4	12	7	5	13	11	10
D	9	8	5	7	10	11	6	14	13	12
E	11	14	8	6	13	9	7	10	12	15
F	12	13	7	8	11	16	9	15	10	14
G	15	11	9	10	16	12	8	17	14	13
H	13	16	12	11	15	14	10	9	18	17
J	16	10	13	12	14	17	11	19	15	18
K	18	15	11	14	19	12	16	13	17	20

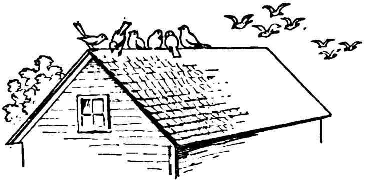
Complete the process:

1. J + 1.
2. H + 2.
3. G + 3.
4. F + 4.
5. E + 5.
6. D + 6.
7. C + 7.
8. B + 8.
9. A + 9.
10. K − 10.
11. J − 9.
12. H − 8.
13. G − 7.
14. F − 6.
15. E − 5.
16. D − 4.
17. C − 3.
18. B − 2.
a. A − 1.
b. N + 6.
c. P + 1.
d. U − 7.
e. S − 3.
f. L − 5.
g. Q + 3.
h. O + 5.
i. M − 2.

Problems



Picture for Ex. 1.



Picture for Ex. 2.

1. Rose has 8 white beads and 5 black ones. Draw the picture. How many beads has she in all? $8 + 5 = ?$

2. Thirteen sparrows sat on the roof of a house. Seven flew away. Draw the picture. How many remained? $13 - 7 = ?$

3. Nine rabbits were eating in a pen, and 8 were playing about. How many rabbits were there? Draw the picture.

4. George has saved 14 cents. How many more must he save so as to have 20 cents?

5. Lucy saved 11 pennies 1 week and 8 the next. How many pennies did she save?

6. Fourteen ducks went to a pond. One of them was taken away. How many were left?

7. We planted 6 trees in our garden last year and 9 this year. How many trees did we plant? Draw the picture.

8. We bought 8 chickens, but want 12 in all. How many more must we buy?

9. Lily is 14 years old. Her little brother is 9 years younger. How old is he?

10. Frank has 19 marbles. Eight of them are brown, and the rest white. How many are white?

Problems

1. Twelve things of one kind are called a dozen. Kate bought a dozen eggs, but on the way home broke 4 eggs. How many were left unbroken?

2. There were 20 horses in a livery stable. If 3 were sold, how many were left?

3. In a class there are 11 boys and 5 girls. How many children are there in the class?

4. Two boys went fishing. One caught 9 fish, and the other 11. How many did both catch?

5. Our flag has 13 stripes. Six are white, and the others are red. How many are red?

6. John has 12 pens, and Mary has 3 less than John. How many pens has Mary?

7. Jennie had 3 cents in her purse and put in 13 more. How many cents were then in her purse?

8. John bought a knife for 15 cents and sold it for 3 cents more than he paid. For how much did he sell it?

9. There were 14 girls in a class. One cold day, only 4 came to school. How many staid at home?

10. When Fannie fed her 4 pigeons, 14 of her neighbor's pigeons joined them. How many pigeons were there then?

11. Mary took 9 roses from one bush and 9 from another. How many roses did she take from both?

12. From an 11-foot pole, the storm broke off a piece 9 feet long. How much of the pole was left?

13. James had 13 marbles and found 7. How many marbles did he then have?

14. A man earned 14 dollars a week and paid 5 dollars for board. How many dollars had he left each week?

Written Work

Add:

	3	10	6	11	4	12	3	13
	3	4	1	5	4	5	7	4
1.	7	2	7	3	4	2	6	3

	15	4	6	2	4	5	6	7
	2	5	6	2	10	3	8	7
2.	2	6	6	2	5	8	3	5

	5	7	6	7	6	5	7	5
	6	2	3	5	4	8	6	12
3.	3	9	4	6	9	4	3	2

	4	2	1	6	5	1	2	3
	3	12	7	5	5	2	3	2
	6	3	5	3	5	3	4	5
4.	5	1	3	4	5	4	5	6

	3	6	2	3	4	3	2	2
	4	6	7	1	1	8	11	4
	5	5	8	10	9	5	3	8
5.	6	3	1	5	6	4	3	4

	4	3	4	2	3	2	4	3
	9	2	2	4	3	8	13	7
	3	12	8	6	3	1	2	5
6.	2	1	4	8	3	9	1	1

Written Work

Subtract:

	15	14	17	18	17	20	19	15
1.	– 13	– 6	– 2	– 16	– 3	– 4	– 16	– 4
	14	16	20	13	19	16	19	18
2.	– 8	– 13	– 11	– 12	– 12	– 8	– 4	– 9
	17	11	16	19	19	13	20	14
3.	– 14	– 6	– 9	– 8	– 10	– 6	– 5	– 2
	16	14	19	15	20	15	11	20
4.	– 6	– 7	– 13	– 10	– 14	– 9	– 4	– 8
	18	19	12	18	16	13	20	17
5.	– 12	– 17	– 6	– 7	– 4	– 3	– 6	– 11
	15	17	14	20	12	18	19	15
6.	– 8	– 8	– 12	– 7	– 9	– 14	– 7	– 6
	18	12	17	15	18	11	20	20
7.	– 5	– 5	– 13	– 7	– 3	– 7	– 17	– 15
	15	18	17	13	14	20	16	19
8.	– 11	– 15	– 12	– 7	– 5	– 13	– 7	– 14

Problems

1. In front of our house are 8 maple trees and 6 elm trees. How many trees are there?

2. From a piece of cloth containing 15 yards, 12 yards were cut off. How long a piece was left?

3. John has 15 cents. How many more must he get so that he can buy a picture book for 17 cents?

4. On our apple tree there were 13 apples. The wind blew off 8. How many were left on the tree?

5. Frank had 5 cents and earned 8 more by selling papers. How many cents did he have then?

6. There were 16 girls in a class in the morning. In the afternoon, 2 others came. How many were there then?

7. Willie bought 14 pounds of sugar, but lost some on the way home. His mother found that he had only 11 pounds left. How many pounds did he lose?

8. Mamma gave Grace 20 cents to buy 15 cents worth of steak. How much money ought Grace to have brought home?

9. Ella had 19 peaches, but gave away 4. How many peaches did she keep?

10. I bought a slate for 15 cents and some pencils for 3 cents. How much did I pay in all?

11. A man who owed 16 dollars, paid 7 dollars. How much did he still owe?

12. John's father gave him a dozen pencils. How many had he left after using 4?

13. There were 18 pine trees on our lot. Twelve of them had to be cut down. How many were left on the lot?

14. Robert had 12 stamps and his father gave him 7 more. How many did he then have?

MULTIPLICATION AND DIVISION

Oral and Written — Twos

1. Show by counters: 1 two; 2 twos; 3 twos; . . . 10 twos.

2. Count by twos to 20 and from 20 back to 2.

3. $8 \times 2 = ?$ $2 \times 2 = ?$ $6 \times 2 = ?$ $4 \times 2 = ?$ $10 \times 2 = ?$
$7 \times 2 = ?$ $1 \times 2 = ?$ $5 \times 2 = ?$ $9 \times 2 = ?$ $3 \times 2 = ?$

4. Make rings showing:

6×2 and 2×6
9×2 and 2×9
7×2 and 2×7
8×2 and 2×8
10×2 and 2×10
5×2 and 2×5

5.
6 = ? 2's
8 = ? 2's
10 = ? 2's
16 = ? 4's

6.
14 = ? 2's
18 = ? 2's
12 = ? 2's
18 = ? 6's

7.
10 = ? 5's
16 = ? 2's
14 = ? 7's
18 = ? 9's

8.
12 = ? 6's
20 = ? 10's
6 = ? 3's
16 = ? 8's

9.
$12 = ? \times ?$
$20 = ? \times ?$

10.
$16 = ? \times ?$
$8 = ? \times ?$

11.
$14 = ? \times ?$
$4 = ? \times ?$

12.
$18 = ? \times ?$
$6 = ? \times ?$

Twos

1. Show by counters and give answers:

$8 \div 2 = ?$ $10 \div 2 = ?$ $6 \div 2 = ?$ $12 \div 2 = ?$ $4 \div 2 = ?$
$2 \div 2 = ?$ $14 \div 2 = ?$ $16 \div 2 = ?$ $18 \div 2 = ?$ $20 \div 2 = ?$

2. In the same way show, giving answers:

$14 \div 2$ and $14 \div 7$ $18 \div 2$ and $18 \div 9$
$16 \div 2$ and $16 \div 8$ $10 \div 2$ and $10 \div 5$
$12 \div 2$ and $12 \div 6$ $20 \div 2$ and $20 \div 10$

3. Perform the indicated operation:

$2\underline{)8}$ $2\underline{)6}$ $2\underline{)4}$ $2\underline{)14}$

$2\underline{)16}$ $2\underline{)12}$ $2\underline{)10}$ $2\underline{)18}$

SUGGESTION. $2\underline{)8}$ means, "How many 2's in 8?"

4. Perform the indicated operation by counters:

$2\underline{)7}$ $2\underline{)15}$ $2\underline{)19}$ $2\underline{)11}$

$2\underline{)17}$ $2\underline{)9}$ $2\underline{)7}$ $2\underline{)5}$

DIRECTION. Say, "7 contains 3 2's and 1."

5. What is: $\frac{1}{2}$ of 10? $\frac{1}{2}$ of 14? $\frac{1}{3}$ of 6? $\frac{1}{4}$ of 8? $\frac{1}{5}$ of 10.

6. What part: Of 8 is 2? Of 16 is 8? Of 14 is 7? Of 20 is 10?

7. At 2 cents each, how many bananas can you buy for 20 cents? Draw the picture.

8. If you can buy 8 marbles for 1 cent, how many can you buy for 2 cents?

Threes

● ● ● 1 3, or $1 \times 3 = 3$
● ● ● 2 3's, or $2 \times 3 = 6$
● ● ● 3 3's, or $3 \times 3 = 9$
● ● ● 4 3's, or $4 \times 3 = 12$
● ● ● 5 3's, or $5 \times 3 = 15$
● ● ● 6 3's, or $6 \times 3 = 18$

1. Count by 3's to 18 and from 18 back to 3.

2. $3 \times 3 = ?$ $1 \times 3 = ?$ $4 \times 3 = ?$ $6 \times 3 = ?$
$2 \times 3 = ?$ $5 \times 3 = ?$ $7 \times 2 = ?$ $9 \times 2 = ?$

3. Show by counters: 4×3 and 3×4; 5×3 and 3×5; 6×3 and 3×6.

4. $12 = ? \times 3$ $18 = ? \times 3$ $15 = ? \times 3$ $9 = ? \times 3$
$18 = ? \times 6$ $15 = ? \times 5$ $18 = ? \times 2$ $12 = ? \times 4$

5. $12 = ? \times ?$ $12 = ? \times ?$ $12 = ? \times ?$ $12 = ? \times ?$
$15 = ? \times ?$ $15 = ? \times ?$ $18 = ? \times ?$ $18 = ? \times ?$
$18 = ? \times ?$ $18 = ? \times ?$ $20 = ? \times ?$ $20 = ? \times ?$

6. Show by counters and give answers:
$12 \div 3$ and $12 \div 4$ $18 \div 3$ and $18 \div 6$
$15 \div 3$ and $15 \div 5$ $8 \div 2$ and $8 \div 4$

7. Perform the indicated operation by counters:
$3\overline{)9}$ $3\overline{)12}$ $3\overline{)18}$ $3\overline{)15}$
$3\overline{)6}$ $5\overline{)15}$ $4\overline{)12}$ $6\overline{)18}$

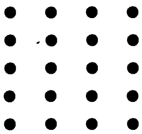
8. Perform the indicated operation by counters:
$12 \div 3$ and $\frac{1}{3}$ of 12 $18 \div 3$ and $\frac{1}{3}$ of 18

9. What is: $\frac{1}{3}$ of 12? $\frac{1}{3}$ of 18? $\frac{1}{4}$ of 12? $\frac{1}{5}$ of 15?

10. What part: Of 6 is 3? Of 9 is 3? Of 8 is 4?

11. A fly has 6 legs. How many legs do 3 flies have? Draw the picture.

Fours and Fives



1 4, or $1 \times 4 = 4$
2 4's, or $2 \times 4 = 8$
3 4's, or $3 \times 4 = 12$
4 4's, or $4 \times 4 = 16$
5 4's, or $5 \times 4 = 20$

NOTE. All the 5's, 6's, 7's, 8's, 9's, and 10's have now been given: 1×5, in 5×1; 2×5, in 5×2; 3×5, in 5×3; 4×5, in 5×4; 2×6, in 6×2; etc.

1. Count by 4's to 20 and from 20 back to 4.

2. Count by 5's to 20 and from 20 back to 5.

3. Complete the process:

$2 \times 4 = ?$	$4 \times 4 = ?$	$3 \times 4 = ?$	$5 \times 4 = ?$
$2 \times 5 = ?$	$3 \times 5 = ?$	$1 \times 5 = ?$	$4 \times 5 = ?$
$\left.\begin{matrix} 4 \div 4 \\ \frac{1}{4} \text{ of } 4 \end{matrix}\right\} = ?$	$\left.\begin{matrix} 12 \div 4 \\ \frac{1}{4} \text{ of } 12 \end{matrix}\right\} = ?$	$\left.\begin{matrix} 15 \div 5 \\ \frac{1}{5} \text{ of } 15 \end{matrix}\right\} = ?$	$\left.\begin{matrix} 20 \div 5 \\ \frac{1}{5} \text{ of } 20 \end{matrix}\right\} = ?$
$4\overline{)13}$	$4\overline{)15}$	$4\overline{)18}$	$4\overline{)19}$
$5\overline{)11}$	$5\overline{)14}$	$5\overline{)15}$	$5\overline{)17}$

4. 4 is what part of 12? 8? 16? 20?

5. 5 is what part of 10? 15? 20?

6. How many bushel baskets will 20 pecks of potatoes fill?

7. How many 5-cent pieces are worth as much as 20 pennies?

8. How many loaves of bread, at 5 cents each, can be bought for 15 cents?

9. At 4 cents a pint, how much will 1 quart of molasses cost? How much will 2 quarts cost?

Sixes to Tens

1. Complete the process:

$\left.\begin{matrix}6\times 2\\ 2\times 6\end{matrix}\right\}=?$ $\left.\begin{matrix}8\times 2\\ 2\times 8\end{matrix}\right\}=?$ $\left.\begin{matrix}7\times 2\\ 2\times 7\end{matrix}\right\}=?$ $\left.\begin{matrix}9\times 2\\ 2\times 9\end{matrix}\right\}=?$

$\left.\begin{matrix}10\times 2\\ 2\times 10\end{matrix}\right\}=?$ $\left.\begin{matrix}5\times 3\\ 3\times 5\end{matrix}\right\}=?$ $\left.\begin{matrix}6\times 3\\ 3\times 6\end{matrix}\right\}=?$ $\left.\begin{matrix}9\times 1\\ 1\times 9\end{matrix}\right\}=?$

2. How many 6's in 12? 18? 15? 13? 19? 20?

3. How many 7's in 14? 7? 10? 16? 18? 20?

4. How many 8's in 8? 16? 9? 11? 14? 19?

5. How many 9's in 18? 10? 12? 15? 9? 19?

6. Complete the process:

$\frac{1}{6}$ of 12 = ? $\frac{1}{6}$ of 18 = ? $\frac{1}{7}$ of 14 = ? $\frac{1}{7}$ of 7 = ? $\frac{1}{10}$ of 20 = ?

$\frac{1}{8}$ of 8 = ? $\frac{1}{8}$ of 16 = ? $\frac{1}{9}$ of 9 = ? $\frac{1}{9}$ of 18 = ? $\frac{1}{10}$ of 10 = ?

7. If a cake of soap costs 6 cents, how much will 2 cakes cost?

8. Farmer Brown planted 14 trees, 7 in each row. How many rows did he plant?

9. At 10 cents a basket, how much will 2 baskets of grapes cost?

10. If sheep are worth 9 dollars a head, how many sheep can be bought for 18 dollars?

11. If you spend 6 cents every week, how long will 18 cents last you?

Review

1. Complete the process:

$2 \times 2 = ?$
$3 \times 3 = ?$
$4 \times 4 = ?$
$1 \times 8 = ?$
$2 \times 7 = ?$
$5 \times 4 = ?$
$6 \times 3 = ?$
$6 \times 2 = ?$

$3 \times 2 = ?$
$4 \times 3 = ?$
$5 \times 1 = ?$
$8 \times 2 = ?$
$2 \times 9 = ?$
$2 \times 4 = ?$
$5 \times 2 = ?$
$3 \times 6 = ?$

$4 \times 2 = ?$
$4 \times 1 = ?$
$5 \times 3 = ?$
$2 \times 6 = ?$
$10 \times 2 = ?$
$3 \times 5 = ?$
$9 \times 2 = ?$
$1 \times 6 = ?$

$12 \times 1 = ?$
$2 \times 8 = ?$
$3 \times 4 = ?$
$2 \times 3 = ?$
$9 \times 1 = ?$
$7 \times 2 = ?$
$4 \times 5 = ?$
$2 \times 5 = ?$

2. How many 2's in each of these numbers:
5, 17, 13, 11, 9, 4, 16, 20, 7, 19, 10, 14, 8, 6, 15, 12, 18.

3. How many 3's in each number of Ex. 2? How many 4's? 5's? 6's? 7's? 8's? 9's?

4. Find the numbers for '?':

$12 = ? \times ?$, or $? \times ?$
$15 = ? \times ?$, or $? \times ?$
$20 = ? \times ?$, or $? \times ?$

$16 = ? \times ?$, or $? \times ?$
$18 = ? \times ?$, or $? \times ?$
$8 = ? \times ?$, or $? \times ?$

5. What part is:

2 of 4? 10? 16? 12? 18? 20? 14?
3 of 9? 6? 12? 18? 15?
4 of 8? 16? 12? 20?

6. What part is:

5 of 10? 6 of 18? 8 of 16? 5 of 15? 6 of 12? 4 of 8?
5 of 20? 7 of 14? 9 of 18? 10 of 20? 2 of 8? 2 of 6?

Review Problems

1. Lulu received a dozen bananas from her papa and divided them equally among her 3 sisters and herself. How many bananas did each get? Draw the picture.

2. Five children put their overshoes in a row. How many overshoes were there? Draw the picture.

3. At 1 cent a stick, how much will 10 sticks of candy cost?

4. There are 12 boys in a field, and each flies a kite. How many kites are there?

5. If you read 2 pages every day, how long will it take you to read 14 pages?

6. On the Fourth of July, Mr. Smith divided 15 cents equally among his 3 children. How many cents did each child get?

7. If a paper of pins costs 2 cents, how much will 10 such papers cost?

8. Frank is 7 years old, and his sister Tillie is twice as old. How old is Tillie?

9. If a box of parlor matches is sold for 2 cents, how many boxes can you buy for 20 cents?

10. How many quarts does a two-gallon jug hold? A three-gallon jug? A four-gallon can?

11. A girl can pick 3 pecks of berries in one day. How many pecks can she pick in 6 days?

12. How many yards high is a 12-foot pole?

13. How many pints can you pour out of a can containing 8 quarts of vinegar?

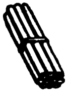
14. At 5 cents a pint, how much must you pay for a quart of cream?

15. How much are a dozen pears worth at 1 cent apiece?

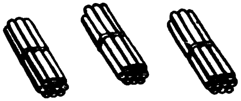
PART THIRD

NUMBERS 1 TO 100

ADDITION AND SUBTRACTION



1 ten or 10 ones



3 tens or 30 ones

1. How many ones in :

1 ten? 3 tens? 5 tens? 7 tens? 9 tens?
2 tens? 4 tens? 6 tens? 8 tens? 10 tens?

2. How many tens in :

60? 50? 40? 100? 70?
20? 80? 10? 30? 90?

3. 2 tens + 3 tens = ? tens. Or, 20 + 30 = ?

4. 4 tens + 2 tens = ? tens. Or, 40 + 20 = ?

5. Complete the process :

40 + 10 = 50 + 30 = 60 + 20 =
30 + 40 = 30 + 60 = 40 + 50 =

Oral Work

1. Complete the process :

70 − 20 =
80 − 10 =
90 − 50 =
40 − 20 =
60 − 40 =
100 − 60 =
50 − 20 =
70 − 10 =
40 − 30 =
90 − 60 =

60 = 20 + ?
70 = 30 + ?
30 = 10 + ?
100 = 70 + ?
90 = 30 + ?
50 = 10 + ?
80 = 70 + ?
100 = 20 + ?
30 = 10 + ?
40 = 20 + ?

40 + ? = 100
80 + ? = 100
70 + ? = 100
60 + ? = 100
10 + ? = 100
20 + ? = 100
80 + ? = 100
50 + ? = 100
90 + ? = 100
30 + ? = 100

SUGGESTION. 70 − 20 = 7 tens − 2 tens, or 5 tens, or 50.

2. Complete the process :

4 × 10
3 × 10
7 × 10
6 × 10
5 × 10
2 × 20
3 × 20
4 × 20
5 × 20
2 × 30

$10\underline{)60}$
$10\underline{)80}$
$10\underline{)30}$
$20\underline{)60}$
$30\underline{)60}$
$40\underline{)80}$
$50\underline{)50}$
$20\underline{)80}$
$30\underline{)90}$
$50\underline{)100}$

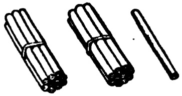
$2\underline{)4}$
$2\underline{)40}$
$3\underline{)9}$
$3\underline{)90}$
$4\underline{)8}$
$4\underline{)80}$
$3\underline{)60}$
$2\underline{)80}$
$5\underline{)100}$
$2\underline{)60}$

20 ÷ 2
40 ÷ 4
60 ÷ 2
80 ÷ 2
80 ÷ 4
80 ÷ 8
90 ÷ 9
60 ÷ 3
70 ÷ 7
60 ÷ 6

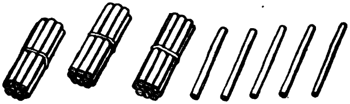
SUGGESTION. 4 × 10 = 4 × 1 ten, or 4 tens, or 40.

3. What is $\frac{1}{2}$ of 40 ? $\frac{1}{2}$ of 80 ? $\frac{1}{3}$ of 60 ? $\frac{1}{4}$ of 80 ?

Oral Work



2 tens and one = 21



3 tens and 5 ones = 35

1. Complete the process :

20 + 1 =
20 + 2 =
20 + 3 =
20 + 4 =
20 + 5 =

20 + 6 =
20 + 7 =
20 + 8 =
20 + 9 =
20 + 10 =

30 + 1 =
30 + 2 =
30 + 3 =
30 + 4 =
30 + 5 =

30 + 6 =
30 + 7 =
30 + 8 =
30 + 9 =
30 + 10 =

2. Count : from 40 to 50 ; from 50 to 60 ; from 90 to 100 ; from 70 to 60 ; from 90 to 80 ; from 50 to 10.

3. Complete the process :

20 + 2 =
40 + 9 =
70 + 8 =
30 + 4 =
80 + 3 =

50 + 1 =
70 + 2 =
60 + 6 =
90 + 7 =
40 + 5 =

2 + 40 =
5 + 70 =
8 + 30 =
7 + 50 =
9 + 20 =

6 + 80 =
3 + 60 =
4 + 90 =
7 + 60 =
3 + 40 =

4. Complete the process :

3 × 10 + 5 = ?
4 × 10 + 7 = ?
8 × 10 + 1 = ?
5 × 10 + 4 = ?

2 × 10 + 7 = ?
6 × 10 + 1 = ?
3 × 10 + 8 = ?
7 × 10 + 4 = ?

35 = 30 + ?
79 = 70 + ?
26 = 20 + ?
47 = 40 + ?

Oral Work

1. Complete the process :

$2 \times 10 + 5 =$
$7 \times 10 + 3 =$
$9 \times 10 + 9 =$
$6 \times 10 + 2 =$
$5 \times 10 + 6 =$
$8 \times 10 + 2 =$

$4 \times 10 + 9 =$
$9 \times 10 + 5 =$
$6 \times 10 + 7 =$
$3 \times 10 + 6 =$
$5 \times 10 + 9 =$
$7 \times 10 + 8 =$

$68 = 6 \times ? + ?$
$95 = 9 \times ? + ?$
$54 = 5 \times ? + ?$
$82 = 8 \times ? + ?$
$67 = 6 \times ? + ?$
$28 = 2 \times ? + ?$

2. Complete the process :

$31 - 1 =$
$93 - 3 =$
$64 - 4 =$
$15 - 5 =$
$42 - 2 =$
$86 - 6 =$
$18 - 8 =$
$75 - 5 =$
$59 - 9 =$
$23 - 3 =$

$53 - ? = 50$
$68 - ? = 60$
$27 - ? = 20$
$62 - ? = 60$
$84 - ? = 80$
$95 - ? = 90$
$71 - ? = 70$
$35 - ? = 30$
$56 - ? = 50$
$49 - ? = 40$

$4 + 2 =$
$14 + 2 =$
$24 + 2 =$
$64 + 2 =$
$3 + 5 =$
$23 + 5 =$
$43 + 5 =$
$6 + 1 =$
$36 + 1 =$
$76 + 1 =$

$5 - 4 =$
$15 - 4 =$
$25 - 4 =$
$55 - 4 =$
$7 - 3 =$
$37 - 3 =$
$97 - 3 =$
$9 - 2 =$
$49 - 2 =$
$59 - 2 =$

3. Complete the process :

$92 + 6 =$
$84 + 4 =$
$53 + 6 =$
$24 + 5 =$
$63 + 4 =$
$71 + 2 =$
$32 + 6 =$
$95 + 3 =$

$38 - 7 =$
$57 - 6 =$
$79 - 4 =$
$29 - 8 =$
$95 - 2 =$
$36 - 4 =$
$29 - 3 =$
$77 - 4 =$

$86 + 2 =$
$56 + 3 =$
$92 + 3 =$
$37 + 2 =$
$25 + 4 =$
$92 + 2 =$
$22 + 6 =$
$41 + 3 =$

$19 - 8 =$
$67 - 2 =$
$39 - 3 =$
$67 - 5 =$
$99 - 4 =$
$45 - 3 =$
$64 - 3 =$
$53 - 2 =$

Problems

1. Tom earned 42 cents, and his father gave him 5 more. How many cents did he then have?

2. My aunt had 35 chickens, but sold 4. How many did she have left?

3. Twenty-four cows were in a field, and 3 were outside of it. How many cows were there in all?

4. John had 25 cents and spent 2 cents. How many cents did he have left?

5. My uncle is now 48 years old. How old was he 5 years ago?

6. Lily had 29 oranges. She ate one every day last week. How many did she then have left?

7. Harry had a fish line 36 feet long. He had to cut off 3 feet from one end. How much of the line was left?

8. A boy gathered 45 chestnuts and gave away 5. How many did he keep for himself?

9. We bought 38 ears of corn; 6 we ate for dinner. How many were left?

10. George counted 25 plums on one tree, and 4 on another. How many did he count on both trees?

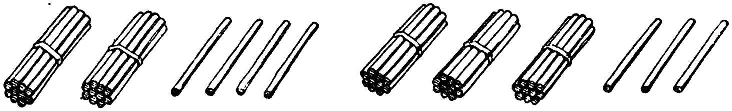
11. I have 30 pencils in a box and 6 loose ones besides. If I bundle them all together, how many pencils will there be in the bundle?

12. We bought 26 rolls of wall paper with which to paper our rooms. When we had finished, we had 4 rolls left. How many rolls did we use?

13. In a basket there were 58 peaches. Four were taken out. How many were left in the basket?

14. A boy got a box containing 24 colored crayons. He found that 4 were broken. How many were whole?

Written Work



1. Add 24 and 33. Show by splints.

24
33
57

The sum of the units (ones) is 7 units; we write 7 in units' column.

The sum of the tens is 5 tens; we write 5 in tens' column.

Ans. 5 tens + 7 ones, or 57.

In the same way, add:

2.	**3.**	**4.**	**5.**	**6.**	**7.**
32	45	67	41	13	54
42	52	21	45	66	34

Without splints, add:

8.	**9.**	**10.**	**11.**	**12.**	**13.**
10	80	37	26	24	21
59	15	22	33	52	67

14.	**15.**	**16.**	**17.**	**18.**	**19.**
21	15	41	32	16	4
44	30	5	40	50	34
32	24	12	7	3	51

20.	**21.**	**22.**	**23.**	**24.**	**25.**
15	22	31	22	13	34
12	3	14	32	20	2
12	33	23	12	34	30
20	40	11	22	1	11

Written Work

Subtract, showing by splints:

1.	**2.**	**3.**	**4.**	**5.**	**6.**
45	84	78	67	56	39
− 22	− 31	− 55	− 43	− 14	− 35

Without splints, subtract:

7.	**8.**	**9.**	**10.**	**11.**	**12.**
36	63	98	85	47	79
− 21	− 32	− 47	− 53	− 15	− 74

13.	**14.**	**15.**	**16.**	**17.**	**18.**
66	58	74	67	85	94
− 43	− 28	− 41	− 32	− 73	− 24

Show by splints:

19. 9 + 4 = ? tens + ? 5 + 8 = ? tens + ?
20. 8 + 6 = ? tens + ? 4 + 7 = ? tens + ?
21. 7 + 5 = ? tens + ? 3 + 8 = ? tens + ?

◆

22. Add 45 and 37. Show by splints:

45
37
82

Ans. 8 tens 2 units.

The sum of the units is 12 units, or 1 ten and 2 units; we write 2 in units' column and carry 1 to tens' column.

The sum of the tens is 8 tens; we write 8 in tens' column.

In the same way, add:

23.	**24.**	**25.**	**26.**	**27.**	**28.**
26	18	64	57	63	39
68	46	19	14	28	55

Written Work

Add:

1.	**2.**	**3.**	**4.**	**5.**	**6.**
72	26	63	19	78	14
19	45	17	34	19	58

7.	**8.**	**9.**	**10.**	**11.**	**12.**
13	38	79	37	15	18
67	58	21	46	66	75

13.	**14.**	**15.**	**16.**	**17.**	**18.**
25	19	7	43	36	28
36	53	65	27	49	35
14	18	3	14	14	7

19.	**20.**	**21.**	**22.**	**23.**	**24.**
66	14	42	34	65	82
3	16	19	47	24	6
23	61	1	18	5	3

25.	**26.**	**27.**	**28.**	**29.**	**30.**
60	27	71	16	62	38
17	8	15	44	9	35
9	33	7	30	17	8
4	15	8	7	2	13

31.	**32.**	**33.**	**34.**	**35.**	**36.**
27	5	2	4	19	26
8	9	16	50	23	14
31	28	3	2	15	13
5	6	48	23	17	27
14	51	9	6	20	12

Written Work

Subtract. Show by splints:

1.	12 − 5 =	**5.**	16 − 9 =
2.	14 − 8 =	**6.**	11 − 4 =
3.	13 − 6 =	**7.**	13 − 5 =
4.	15 − 7 =	**8.**	12 − 4 =

9. Subtract 45 from 82. Show by splints.

$$\begin{array}{r}82\\45\\\hline 37\end{array}$$

5 units from 2 units we cannot take; we take 1 ten from 8 tens, leaving 7 tens; 1 ten or 10 units, with 2 units, 12 units; 5 units from 12 units leaves 7 units; we write 7 in units' column.

4 tens from 7 tens leaves 3 tens; we write 3 in tens' column. *Ans.* 37.

Subtract in the same way:

10.	**11.**	**12.**	**13.**	**14.**	**15.**
55	43	71	86	60	70
− 17	− 28	− 39	− 48	− 25	− 38

16.	**17.**	**18.**	**19.**	**20.**	**21.**
74	58	91	67	82	57
− 38	− 19	− 32	− 48	− 28	− 38

22.	**23.**	**24.**	**25.**	**26.**	**27.**
62	75	85	54	54	95
− 35	− 66	− 27	− 27	− 36	− 67

28.	**29.**	**30.**	**31.**	**32.**	**33.**
100	70	60	100	90	80
− 37	− 44	− 17	− 25	− 56	− 33

Written Work

	a	*b*	*c*	*d*	*e*	*f*
1. To 45 add :	23	17	34	29	46	52
2. To 28 add :	43	65	34	16	57	49
3. To 36 add :	13	52	27	45	38	59
4. To 57 add :	20	41	36	17	25	19
5. From 100 subtract :	23	64	51	47	32	76
6. From 78 subtract :	37	21	59	42	18	40
7. From 61 subtract :	14	27	35	41	53	28
8. From 45 subtract :	16	23	28	31	35	20

Add by:

9. 13's from 17 to 95.
10. 19's from 25 to 82.
11. 14's from 18 to 88.
12. 15's from 39 to 99.

Subtract by:

13. 17's from 100 to 15.
14. 26's from 92 to 14.
15. 18's from 83 to 11.
16. 16's from 73 to 9.

17. On a boat there were 72 persons; 34 were men and the rest women. How many women were there?

18. Mary and Lucy went into the fields to pick flowers. When they came home, Mary had 48 flowers, and Lucy 25. How many did both have?

19. A First Reader contains 87 pages. After the children have read the first 45 pages, how many more must they read to finish the book?

20. We bought 68 flags to decorate our room on Washington's birthday, but used only 44. How many were left?

21. Miss Brown teaches 29 boys and 14 girls. How many children does she teach?

Problems

1. There are 35 trees in one orchard and 26 in another. How many are there in both?

2. Our schoolhouse is 57 feet high from the ground to the roof. The roof itself is 18 feet high. How high is the whole schoolhouse?

3. I paid 56 dollars for my wheel and 17 dollars for repairs. How much did I pay in all?

4. A man has to travel 92 miles. At the end of the first day he finds that he has traveled 49 miles. How many more miles must he travel?

5. A pole was 52 feet high. A storm broke off a piece 23 feet long. How long a piece was left standing?

6. Mamma had a dozen eggs, but Easter being near, she bought 18 more. How many did she then have?

7. Freddie's uncle picked 23 bushels of tomatoes one day and 19 bushels the next. How many bushels did he pick in the two days?

8. A grocer has 2 barrels of vinegar, the one containing 16, and the other 14 gallons. If he pours all the vinegar into an empty barrel, how many gallons will there be in it?

9. Henry got a kite with a string 79 yards long. To this he tied 12 yards more. How long was the string then?

10. There are 40 fruit trees in Mr. Smith's garden. Of these, 27 are apple trees, and the rest plum trees. How many are plum trees?

11. Mr. Jones paid 34 dollars for a suit of clothes, 4 dollars for a hat, 6 dollars for a pair of shoes, and 6 dollars for underwear. How much did he pay for all?

Oral Work

Complete the process:

1.
25 + ? = 30
71 + ? = 80
34 + ? = 40
57 + ? = 60
16 + ? = 20
43 + ? = 50
85 + ? = 90
62 + ? = 70
98 + ? = 100
64 + ? = 70

2.
36 + ? = 40
51 + ? = 60
12 + ? = 20
69 + ? = 70
84 + ? = 90
23 + ? = 30
75 + ? = 80
48 + ? = 50
99 + ? = 100
53 + ? = 60

3.

$$\left.\begin{array}{r}10\\20\\30\\40\\50\\60\\70\\80\\90\\100\end{array}\right\} - \left\{\begin{array}{r}1\\2\\3\\4\\5\\6\\7\\8\\9\\10\end{array}\right.$$

4.
9 + 2 =
19 + 2 =
29 + 2 =
59 + 2 =
79 + 2 =

5.
11 − 2 =
21 − 2 =
41 − 2 =
61 − 2 =
91 − 2 =

6.
9 + 3 =
29 + 3 =
49 + 3 =
11 − 3 =
41 − 3 =

7.
71 − 3 =
9 + 4 =
59 + 4 =
79 + 4 =
89 + 4 =

8.
11 − 4 =
61 − 4 =
81 − 4 =
9 + 5 =
39 + 5 =
59 + 5 =
79 + 5 =

9.
11 − 5 =
41 − 5 =
61 − 5 =
9 + 6 =
49 + 6 =
69 + 6 =
29 + 6 =

10.
11 − 6 =
31 − 6 =
51 − 6 =
8 + 3 =
28 + 3 =
38 + 3 =
68 + 6 =

11.
12 − 5 =
62 − 5 =
14 − 7 =
54 − 7 =
6 + 8 =
36 + 8 =
76 + 8 =

Oral Work

Replace the star by each figure except 9:

*7 + 4; + 5; + 6; . . . + 9.
*6 + 5; + 6; + 7; + 8; + 9.
*5 + 6; + 7; + 8; + 9.
*4 + 7; + 8; + 9.
*3 + 8; + 9.
*2 + 9.

Replace *1 *by each figure except* 0:

*13 − 4; − 5; − 6; . . . − 9.
*14 − 5; − 6; − 7; − 8; − 9.
*15 − 6; − 7, − 8; − 9.
*16 − 7; − 8; − 9.
*17 − 8; − 9.
*18 − 9.

Count:

1. 2, 4, 6, 8 . . . . 100.
2. 1, 3, 5, 7 . . . . 99.
3. 100, 98, 96 . . . 0.
4. 99, 97, 95 . . . 1.
5. 3, 6, 9 . . . . . 99.
6. 2, 5, 8 . . . . . 98.
7. 100, 97, 94 . . . 1.
8. 99, 96, 93 . . . 0.
9. 4, 8, 12 . . . . . 100.
10. 100, 96, 92 . . . 0.
11. 3, 7, 11 . . . . . 99.
12. 97, 93, 89 . . . 1.
13. 5, 10, 15 . . . . 100.
14. 100, 95, 90 . . . 0.
15. 2, 7, 12 . . . . . 97.
16. 96, 91, 86 . . . 1.
17. 6, 12, 18 . . . . 96.
18. 96, 90, 84 . . . 0.
19. 3, 9, 15 . . . . . 99.
20. 100, 94, 88 . . . 4.
21. 7, 14, 21 . . . . 98.
22. 98, 91, 84 . . . 0.
23. 5, 12, 19 . . . . 96.
24. 3, 10, 17 . . . . 94.
25. 8, 16, 24 . . . . 96.
26. 96, 88, 80 . . . 0.
27. 2, 10, 18 . . . . 98.
28. 99, 91, 83 . . . 3.
29. 5, 13, 21 . . . . 93.
30. 97, 89, 81 . . . 1.
31. 9, 18, 27 . . . . 99.
32. 99, 90, 81 . . . 0.
33. 4, 13, 22 . . . . 94.
34. 96, 87, 78 . . . 6.
35. 7, 16, 25 . . . . 97.
36. 98, 89, 80 . . . 8.

Problems

1. John has 25 cents. How many more must he have so that he can buy a book for 30 cents?

2. What number must be added to 54 to make 60?

3. Last week our class numbered 49 pupils; on Monday, 2 more. How many pupils were in our class then?

4. We had 71 chickens, but 4 of them died. How many were left?

5. A man bought a horse for 38 dollars and sold it for 5 dollars more than he paid. For how much did he sell it?

6. I paid 62 cents for a fishing pole and 7 cents for some hooks. How much did I pay in all?

7. James found 18 chestnuts, and his sister Mary found 9. How many chestnuts did both find?

8. I had 92 dollars and bought a suit of clothes for 8 dollars. How much money did I have left?

9. From a piece of cloth containing 42 yards, 6 yards were sold. How many yards were left?

10. I paid 58 cents for a book, and 8 cents for some pencils. How much did I pay in all?

11. Last year we bought 32 trees for our farm. This year we bought 6 more. How many trees did we buy in the two years?

12. In our class there are 28 boys. When 3 of them are absent, how many are present?

13. We bought a bunch of 96 bananas and gave 6 of them to the children. How many were left?

14. Two boys went out fishing. One caught 23 fish, and the other caught 6. How many fish did both catch?

Oral Work

Complete the process:

1.

20 + 30 =
70 + 10 =
40 + 30 =
10 + 60 =
50 + 40 =
30 + 50 =
60 + 20 =
70 + 30 =
20 + 50 =
40 + 20 =

2.

70 − 50 =
40 − 30 =
90 − 20 =
60 − 40 =
50 − 20 =
70 − 60 =
100 − 50 =
60 − 30 =
30 − 10 =
80 − 60 =

3.

60 + 30 =
60 + 34 =
20 + 50 =
20 + 59 =
40 + 10 =
40 + 18 =
70 + 20 =
70 + 22 =
30 + 40 =
30 + 45 =

4.

30 + 42 =
20 + 68 =
40 + 33 =
10 + 77 =
30 + 41 =
70 + 15 =
40 + 37 =
10 + 64 =
60 + 21 =
20 + 56 =

5.

55 + 20 =
16 + 80 =
24 + 60 =
32 + 50 =
58 + 40 =
47 + 30 =
61 + 20 =
17 + 70 =
36 + 10 =
25 + 70 =

6.

78 + 10 =
40 + 51 =
50 + 29 =
65 + 30 =
20 + 52 =
13 + 50 =
46 + 30 =
50 + 48 =
20 + 67 =
38 + 60 =

7.

60 − 20 =
64 − 20 =
80 − 30 =
85 − 30 =
90 − 50 =
92 − 50 =
50 − 10 =
57 − 10 =
70 − 40 =
72 − 40 =

8.

61 − 20 =
52 − 30 =
83 − 50 =
39 − 20 =
74 − 60 =
95 − 40 =
97 − 70 =
68 − 30 =
82 − 10 =
53 − 30 =

Oral Work

Complete the process :

1.

75 = 60 + ?
93 = 80 + ?
82 = 50 + ?
44 = 30 + ?
56 = 40 + ?
91 = 70 + ?
34 = 20 + ?
84 = 60 + ?
73 = 40 + ?
66 = 40 + ?

2.

80 − 50 =
80 − 56 =
40 − 20 =
40 − 27 =
30 − 10 =
30 − 15 =
100 − 60 =
100 − 68 =
90 − 40 =
90 − 44 =

3.

30 − 14 =
100 − 48 =
60 − 24 =
40 − 33 =
70 − 31 =
40 − 17 =
60 − 43 =
50 − 26 =
80 − 59 =
90 − 55 =

4.

50 + 25 =
47 + 20 =
26 + 30 =
16 + 60 =
50 + 37 =
72 − 50 =
90 − 34 =
80 − 42 =
100 − 40 =
79 − 30 =

5.

33 + 54 =
33 + 50 = 83
83 + 4 = 87
22 + 35 =
46 + 51 =
17 + 62 =
55 + 23 =
31 + 46 =
22 + 15 =
34 + 24 =

6.

85 + 12 =
43 + 34 =
74 + 14 =
15 + 44 =
78 + 11 =
24 + 63 =
52 + 27 =
11 + 65 =
72 + 25 =
37 + 41 =

7.

87 − 35 =
87 − 30 = 57
57 − 5 = 52
63 − 41 =
24 − 13 =
95 − 72 =
48 − 26 =
79 − 66 =
33 − 12 =
65 − 13 =

8.

82 − 41 =
35 − 24 =
46 − 33 =
73 − 52 =
59 − 27 =
66 − 33 =
27 − 15 =
54 − 32 =
88 − 65 =
42 − 21 =

Oral and Written Work

1. To 40 add:

26; 49; 52; 17; 34; 48; 21; 55; 33; 22.

2. To 52 add:

24; 30; 25; 47; 13; 26; 11; 32; 45; 41.

3. To 35 add:

41; 50; 34; 53; 12; 14; 23; 62; 13; 32.

4. To 47 add:

22; 40; 51; 12; 30; 21; 50; 32; 41; 52.

5. To 14 add:

70; 34; 81; 54; 23; 65; 12; 43; 75; 42.

6. To 58 add:

25; 38; 41; 36; 29; 13; 37; 24; 42; 39.

7. To 29 add:

22; 50; 65; 46; 33; 48; 19; 64; 57; 71.

8. From 89 subtract:

37; 63; 28; 45; 50; 14; 72; 81; 29; 46.

9. From 96 subtract:

44; 60; 85; 23; 51; 12; 25; 63; 32; 76.

10. From 54 subtract:

33; 44; 52; 24; 50; 41; 31; 10; 23; 12.

11. From 37 subtract:

15; 21; 26; 13; 17; 20; 14; 25; 12; 24.

12. From 62 subtract:

51; 33; 40; 22; 14; 35; 48; 57; 36; 29.

13. From 98 subtract:

89; 77; 68; 54; 45; 36; 23; 12; 81; 40.

14. From 100 subtract:

74; 42; 80; 27; 93; 31; 59; 18; 46; 65.

Problems

1. A room is 18 feet long and 12 feet wide. How many feet is the distance around it?

2. Grace's aunt gave her all the money she had: 2 dimes, 1 nickel, and 2 pennies. How much money did Grace get?

3. I bought first 15 bushels of wheat, then 16, and then 17. How many bushels altogether?

4. Papa has 31 books on one shelf and 43 on another. How many books has he on both?

5. A grocer bought a box of 96 eggs. Twelve of them were spoiled. How many were good?

6. A tailor used 28 yards of black cloth and 10 yards of blue cloth. How many yards did he use in all?

7. 14 boys were playing soldiers on one side and 13 on the other. How many boys were there altogether?

8. Harry earns 75 cents a week by carrying papers, and gives his mother 65 cents. How much does he keep?

9. Two boys went out fishing. One caught 31 fish, and the other 16. How many did both catch?

10. Charlie is 12 years old, and his father 46 years. How many years older than Charlie is his father?

11. A woman sold 42 eggs yesterday and 35 to-day. How many did she sell in the two days?

12. Alice has 57 beans, and Ella has 15 less than Alice. How many has Ella?

13. Mamma bought 84 oranges. Thirteen she put upon the table. How many could she put away?

14. A milkman who had 25 gallons of milk sold all but 4 gallons. How many gallons did he sell?

15. I had 75 cups and sold 20. How many had I left?

MULTIPLICATION AND DIVISION

Oral and Written Work — Twos

1. Recite the table of 2's. From 20 count back by 2's.

2. Complete the process:

4 × 2 = ?
6 × 2 = ?
3 × 2 = ?
2 × 2 = ?
5 × 2 = ?

1 × 2 = ?
9 × 2 = ?
7 × 2 = ?
8 × 2 = ?
10 × 2 = ?

10 = ? × 2
6 = ? × 2
4 = ? × 2
16 = ? × 2
8 = ? × 2

14 = ? × 2
12 = ? × 2
20 = ? × 2
2 = ? × 2
18 = ? × 2

3. How many 2's in: 12? 16? 18? 8? 4? 14? 10? 2? 20? 6?

4. Complete the process:

2)4
2)16
2)12
2)18
2)20

2)8
2)14
2)6
2)2
2)10

2)11
2)5
2)7
2)9
2)15

2)19
2)17
2)1
2)3
2)13

Twos

1. Complete the process:

$8 \div 2 = ?$
$12 \div 2 = ?$
$6 \div 2 = ?$
$10 \div 2 = ?$
$14 \div 2 = ?$
$18 \div 2 = ?$
$16 \div 2 = ?$
$20 \div 2 = ?$

$\frac{1}{2}$ of $10 = ?$
$\frac{1}{2}$ of $8 = ?$
$\frac{1}{2}$ of $6 = ?$
$\frac{1}{2}$ of $20 = ?$
$\frac{1}{2}$ of $18 = ?$
$\frac{1}{2}$ of $14 = ?$
$\frac{1}{2}$ of $16 = ?$
$\frac{1}{2}$ of $12 = ?$

$6 \div 3 = ?$
$10 \div 5 = ?$
$18 \div 9 = ?$
$12 \div 6 = ?$
$8 \div 4 = ?$
$14 \div 7 = ?$
$16 \div 8 = ?$
$20 \div 10 = ?$

2. Show by counters:

4×2 and 2×4
6×2 and 2×6
9×2 and 2×9
5×2 and 2×5
7×2 and 2×7
8×2 and 2×8

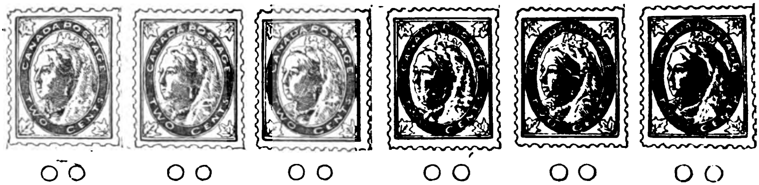
$12 \div 2$ and $\frac{1}{2}$ of 12
$16 \div 2$ and $\frac{1}{2}$ of 16
$14 \div 2$ and $\frac{1}{2}$ of 14
$6 \div 3$ and $\frac{1}{3}$ of 6
$8 \div 4$ and $\frac{1}{4}$ of 8
$12 \div 6$ and $\frac{1}{6}$ of 12

3. Compare: 2 with 6; with 8; with 12; with 4; with 10; with 16; with 18; with 14; with 20.

Ans. 2 is $\frac{1}{3}$ of 6; 2 is $\frac{1}{4}$ of 8; etc.

4. Compare: 6 with 3; 8 with 2; 16 with 2; 20 with 10.

Problems — Twos



Picture for Ex. 1

1. How much do 6 2-cent stamps cost? 6 × 2¢ = ?

2. John has 18 tin soldiers. If he makes them march two abreast, how many couples does he have?

3. A dime is worth 2 nickels. How many nickels are worth as much as 5 dimes? 7 dimes? 10 dimes? 9 dimes?

4. A door has 2 handles. To how many doors do 14 handles belong?

5. We learned 9 new words yesterday. If we learn just as many to-day, how many will that be in all?

6. My knife has 2 blades. How many blades do 7 such knives have? Make the picture.

7. We planted 16 trees last year, one half of them in front of our house, and the other half behind it. How many trees did we plant on each side? Make the picture.

8. Twelve bright little eyes were looking out of a window. To how many children did they belong?

9. Jack and Jill are twins. They received 20 cents on their birthday. How many cents should each receive?

10. There are 20 boys in a class. If they march by twos, how many pairs will there be?

11. Every bean has 2 halves. How many halves can you get from 6 beans?

12. For 15 ¢ how many pears can you buy at 2 ¢ each?

Threes

● ● ●	1 3,	or	1 × 3 = 3
● ● ●	2 3's,	or	2 × 3 = 6
● ● ●	3 3's,	or	3 × 3 = 9
● ● ●	4 3's,	or	4 × 3 = 12
● ● ●	5 3's,	or	5 × 3 = 15
● ● ●	6 3's,	or	6 × 3 = 18
● ● ●	7 3's,	or	7 × 3 = 21
● ● ●	8 3's,	or	8 × 3 = 24
● ● ●	9 3's,	or	9 × 3 = 27
● ● ●	10 3's,	or	10 × 3 = 30

1. Count by 3's to 30 and back again.

2. Complete the process :

3 × 3 = ?
2 × 3 = ?
6 × 3 = ?
5 × 3 = ?
1 × 3 = ?

4 × 3 = ?
7 × 3 = ?
8 × 3 = ?
9 × 3 = ?
10 × 3 = ?

12 = ? × 3
18 = ? × 3
9 = ? × 3
6 = ? × 3
15 = ? × 3

3 = ? × 3
21 = ? × 3
27 = ? × 3
30 = ? × 3
24 = ? × 3

3. How many 3's in : 9? 12? 21? 30? 24? 15? 3? 6? 18? 27?

4. Complete the process :

8 = ? × 3 + ?
11 = ? × 3 + ?
17 = ? × 3 + ?
20 = ? × 3 + ?
22 = ? × 3 + ?
16 = ? × 3 + ?
19 = ? × 3 + ?
13 = ? × 3 + ?

$3\underline{)9}$
$3\underline{)6}$
$3\underline{)15}$
$3\underline{)30}$
$3\underline{)21}$
$3\underline{)18}$
$3\underline{)24}$
$3\underline{)27}$

$3\underline{)25}$
$3\underline{)17}$
$3\underline{)13}$
$3\underline{)29}$
$3\underline{)20}$
$3\underline{)16}$
$3\underline{)26}$
$3\underline{)22}$

6 ÷ 3 = ?
12 ÷ 3 = ?
21 ÷ 3 = ?
27 ÷ 3 = ?
18 ÷ 3 = ?
24 ÷ 3 = ?
30 ÷ 3 = ?
15 ÷ 3 = ?

Threes

1. Show by counters:

4 × 3 and 3 × 4

5 × 3 and 3 × 5

6 × 3 and 3 × 6

7 × 3 and 3 × 7

8 × 3 and 3 × 8

9 × 3 and 3 × 9

9 ÷ 3 and $\frac{1}{3}$ of 9

15 ÷ 3 and $\frac{1}{3}$ of 15

24 ÷ 3 and $\frac{1}{3}$ of 24

12 ÷ 4 and $\frac{1}{4}$ of 12

18 ÷ 6 and $\frac{1}{6}$ of 18

15 ÷ 5 and $\frac{1}{5}$ of 15

2. Complete the process:

6 = 3 × ?

6 = 2 × ?

12 = 6 × ?

12 = 3 × ?

12 = 4 × ?

12 = 2 × ?

15 = ? × ?

15 = ? × ?

16 = ? × ?

16 = ? × ?

18 = ? × ?

18 = ? × ?

18 = ? × ?

18 = ? × ?

20 = ? × ?

20 = ? × ?

21 = ? × ?

21 = ? × ?

24 = ? × ?

24 = ? × ?

27 = ? × ?

27 = ? × ?

30 = ? × ?

30 = ? × ?

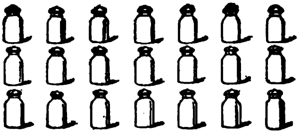
3. What is $\frac{1}{3}$ of: 18? 24? 6? 15? 9? 30? 21? 3? 27? 12?

4. What is $\frac{1}{4}$ of 12? $\frac{1}{5}$ of 10? $\frac{1}{5}$ of 15? $\frac{1}{6}$ of 18? $\frac{1}{2}$ of 18? $\frac{1}{9}$ of 27?

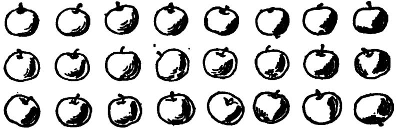
5. Compare: 3 with 6; with 9; with 21; with 27; with 24; with 12; with 15; with 30.

6. Compare: 9 with 3; 8 with 4; 16 with 2; 18 with 9; 24 with 8.

Problems — Threes



Picture for Ex. 1



Picture for Ex. 2

1. We use 3 pints of milk every day. How many pints do we use in 7 days? 7 × 3 pints = ? Make the picture.

2. Joe eats 3 apples every day. How long will 24 apples last him? Make the picture.

3. How many pennies should you give for 3 five-cent pieces?

4. A grocer has a can holding 24 quarts of oil. How many times can he sell 3 quarts at a time, and how many quarts will he have left?

5. To draw a triangle you must make 3 lines. How many lines must you make in order to draw 8 separate triangles?

6. Papa brought 18 peaches home for his 3 boys. How many peaches should each boy receive? Make the picture.

7. If one cent buys 3 marbles, how much must you pay for 30 marbles?

8. A certain man earns 27 dollars in 3 weeks. How much does he earn in one week? Make the picture.

9. If you can buy 3 oranges for a nickel, how many oranges can you buy for 9 nickels? Make the picture.

10. Kate and her friends had 27 feet of ribbon with which to trim their dolls. If they used 3 feet for each doll, how many dolls could they trim?

Fours

● ● ● ●	1	4,	or	$1 \times 4 = 4$
● ● ● ●	2	4's,	or	$2 \times 4 = 8$
● ● ● ●	3	4's,	or	$3 \times 4 = 12$
● ● ● ●	4	4's,	or	$4 \times 4 = 16$
● ● ● ●	5	4's,	or	$5 \times 4 = 20$
● ● ● ●	6	4's,	or	$6 \times 4 = 24$
● ● ● ●	7	4's,	or	$7 \times 4 = 28$
● ● ● ●	8	4's,	or	$8 \times 4 = 32$
● ● ● ●	9	4's,	or	$9 \times 4 = 36$
● ● ● ●	10	4's,	or	$10 \times 4 = 40$

1. Count: 4, 8, . . . 40; 40, 36, . . . 4.

2. Complete the process:

$3 \times 4 =$
$5 \times 4 =$
$1 \times 4 =$
$4 \times 4 =$
$2 \times 4 =$

$6 \times 4 =$
$7 \times 4 =$
$8 \times 4 =$
$9 \times 4 =$
$10 \times 4 =$

$16 = ? \times 4$
$4 = ? \times 4$
$12 = ? \times 4$
$20 = ? \times 4$
$8 = ? \times 4$

$24 = ? \times 4$
$28 = ? \times 4$
$40 = ? \times 4$
$36 = ? \times 4$
$32 = ? \times 4$

3. How many times is 4 contained in: 8? 16? 24? 4? 36? 28? 12? 40? 20? 32?

4. Complete the process:

$17 = ? \times 4 + ?$
$22 = ? \times 4 + ?$
$31 = ? \times 4 + ?$
$21 = ? \times 4 + ?$
$19 = ? \times 4 + ?$
$11 = ? \times 4 + ?$

$4\overline{)16}$
$4\overline{)12}$
$4\overline{)20}$
$4\overline{)32}$
$4\overline{)24}$
$4\overline{)36}$

$4\overline{)21}$
$4\overline{)13}$
$4\overline{)18}$
$4\overline{)25}$
$4\overline{)27}$
$4\overline{)39}$

$20 \div 4 = ?$
$32 \div 4 = ?$
$16 \div 4 = ?$
$12 \div 4 = ?$
$8 \div 4 = ?$
$28 \div 4 = ?$

Fours

1. Complete the process :

$37 = ? \times 4 + ?$

$26 = ? \times 4 + ?$

$38 = ? \times 4 + ?$

$25 = ? \times 4 + ?$

$4\overline{)33}$

$4\overline{)17}$

$4\overline{)30}$

$4\overline{)15}$

$4\overline{)4}$

$4\overline{)8}$

$4\overline{)28}$

$4\overline{)40}$

$4 \div 4 = ?$

$36 \div 4 = ?$

$24 \div 4 = ?$

$40 \div 4 = ?$

2. Show by counters :

5×4 and 4×5

6×4 and 4×6

7×4 and 4×7

8×4 and 4×8

9×4 and 4×9

10×4 and 4×10

$24 \div 4$ and $\frac{1}{4}$ of 24

$32 \div 4$ and $\frac{1}{4}$ of 32

$28 \div 4$ and $\frac{1}{4}$ of 28

$20 \div 5$ and $\frac{1}{5}$ of 20

$18 \div 3$ and $\frac{1}{3}$ of 18

$28 \div 7$ and $\frac{1}{7}$ of 28

3. What is $\frac{1}{4}$ of: 16? 28? 36? 12? 20? 8? 24? 32? 4? 40?

4. What is $\frac{1}{5}$ of 10? $\frac{1}{5}$ of 20? $\frac{1}{5}$ of 15? $\frac{1}{5}$ of 5?

5. What is $\frac{1}{6}$ of 12? $\frac{1}{6}$ of 18? $\frac{1}{6}$ of 24? $\frac{1}{6}$ of 6?

6. What is $\frac{1}{7}$ of 14? $\frac{1}{7}$ of 21? $\frac{1}{7}$ of 7? $\frac{1}{7}$ of 28?

7. What is $\frac{1}{8}$ of 16? $\frac{1}{8}$ of 8? $\frac{1}{8}$ of 32? $\frac{1}{8}$ of 24?

8. Compare 4: with 12; with 16; with 8; with 20; with 28; with 24; with 36; with 40; with 32.

9. Compare: 16 with 4; 21 with 3; 18 with 6; 27 with 9.

Problems — Fours

Picture for Ex. 1

1. We saw 4 nests this morning, and in each nest there were 4 eggs. How many eggs were there in the 4 nests?

4×4 eggs = ? Make the picture.

2. If 4 penholders cost 20 cents, what is the cost of one?

$\frac{1}{4}$ of 20 cents = ? Or, $4 \times ? = 20$ cents.

3. How many pecks are there in 5 bushels? How many in 8 bushels? In 10 bushels? In 6 bushels? In 7 bushels?

4. How many separate squares can you make with 28 matches?

5. How many quarts can be drawn from a 10-gallon cask of oil?

6. If 28 apples are divided equally among 4 children, how many does each child receive?

7. A boy bought 4 pints of chestnuts at 5 cents a pint. How much did they cost him?

8. How many gallons are there in 20 quarts? How many in 16 quarts? In 24 quarts? In 36 quarts? In 32 quarts?

9. Edna bought half a dozen oranges at 4 cents each. How much did they all cost?

10. Forty trees were planted in 4 rows. How many were there in each row? Make the picture.

11. What is the cost of 8 hats at 4 dollars each? Of 6 hats? Of 9 hats? Of 10 hats?

12. How many blank books can you buy for 24 cents at nts apiece? Make the picture.

Fives

1. Write the table of 5's. See table of 4's, p. 74.

2. 5, 10, . . . 50; 50, 45, . . . 5.

3. Complete the process:

$3 \times 5 = ?$	$20 = ? \times 5$	$13 = ? \times 5 + ?$	$5\overline{)20}$
$1 \times 5 = ?$	$10 = ? \times 5$	$16 = ? \times 5 + ?$	$5\overline{)16}$
$2 \times 5 = ?$	$5 = ? \times 5$	$33 = ? \times 5 + ?$	$5\overline{)17}$
$4 \times 5 = ?$	$15 = ? \times 5$	$22 = ? \times 5 + ?$	$5\overline{)15}$
$5 \times 5 = ?$	$30 = ? \times 5$	$43 = ? \times 5 + ?$	$5\overline{)31}$
$6 \times 5 = ?$	$40 = ? \times 5$	$31 = ? \times 5 + ?$	$5\overline{)29}$
$7 \times 5 = ?$	$50 = ? \times 5$	$28 = ? \times 5 + ?$	$5\overline{)30}$
$8 \times 5 = ?$	$25 = ? \times 5$	$39 = ? \times 5 + ?$	$5\overline{)41}$
$9 \times 5 = ?$	$35 = ? \times 5$	$47 = ? \times 5 + ?$	$5\overline{)45}$
$10 \times 5 = ?$	$45 = ? \times 5$	$24 = ? \times 5 + ?$	$5\overline{)48}$

4. Show by counters:

$$\left.\begin{array}{l}25 \div 5\\ \frac{1}{5}\text{ of }25\end{array}\right\} = ? \qquad \left.\begin{array}{l}45 \div 5\\ \frac{1}{5}\text{ of }45\end{array}\right\} = ? \qquad \left.\begin{array}{l}20 \div 5\\ 5\text{'s in }20\end{array}\right\} = ?$$

$$\left.\begin{array}{l}30 \div 5\\ \frac{1}{5}\text{ of }30\end{array}\right\} = ? \qquad \left.\begin{array}{l}40 \div 5\\ \frac{1}{5}\text{ of }40\end{array}\right\} = ? \qquad \left.\begin{array}{l}35 \div 5\\ 5\text{'s in }35\end{array}\right\} = ?$$

5. What is $\frac{1}{5}$ of: 25? 40? 10? 35? 50? 5? 15? 20? 30? 45?

Fives

1. Complete the process:

$\left.\begin{matrix}3\times5\\5\times3\end{matrix}\right\}=?$ $\left.\begin{matrix}4\times5\\5\times4\end{matrix}\right\}=?$ $\left.\begin{matrix}8\times5\\5\times8\end{matrix}\right\}=?$ $\left.\begin{matrix}10\times5\\5\times10\end{matrix}\right\}=?$

$\left.\begin{matrix}6\times5\\5\times6\end{matrix}\right\}=?$ $\left.\begin{matrix}7\times5\\5\times7\end{matrix}\right\}=?$ $\left.\begin{matrix}9\times5\\5\times9\end{matrix}\right\}=?$ $\left.\begin{matrix}8\times4\\4\times8\end{matrix}\right\}=?$

2. What is $\frac{1}{6}$ of 30? $\frac{1}{6}$ of 24? $\frac{1}{6}$ of 18?

3. What is $\frac{1}{7}$ of 35? $\frac{1}{7}$ of 21? $\frac{1}{7}$ of 28?

4. What is $\frac{1}{8}$ of 16? $\frac{1}{8}$ of 32? $\frac{1}{8}$ of 24?

5. What is $\frac{1}{9}$ of 18? $\frac{1}{9}$ of 27? $\frac{1}{9}$ of 45?

6. What is $\frac{1}{10}$ of 40? $\frac{1}{10}$ of 30? $\frac{1}{10}$ of 50?

7. Complete the process:

$12 = ? \times 2$ $20 = ? \times 4$ $24 = ? \times 4$ $32 = ? \times 4$
$12 = ? \times 6$ $20 = ? \times 2$ $24 = ? \times 8$ $32 = ? \times 8$
$16 = ? \times 4$ $18 = ? \times 3$ $30 = ? \times 5$ $40 = ? \times 4$
$16 = ? \times 8$ $18 = ? \times 9$ $30 = ? \times 10$ $40 = ? \times 8$

8. Compare:

5 with 15; 25; 35; 45; 10; 20; 30; 40; 50.
3 with 9; 15; 12; 21; 27; 30; 24; 6; 18.
4 with 8; 16; 32; 40; 12; 20; 28; 36; 24.
2 with 4; 8; 12; 16; 20; 6; 14; 10; 18.

9. Compare:

12 with 2; 3; 4; 6. 24 with 3; 4; 6; 8.
18 with 2; 3; 6; 9. 30 with 3; 6; 5; 10.
20 with 2; 4; 5; 10. 40 with 4; 8; 5; 10.

10. Compare: 15 with 5; 25 with 5; 35 with 5; 45
5.

Problems — Fives

1. At 5 cents apiece, how much will 2 loaves of bread cost? 4 loaves? 6 loaves? 8 loaves? 9 loaves? 7 loaves?

2. John can carry 5 pieces of wood at a time from the cellar to the kitchen. How many pieces can he carry in going 5 times?

3. How many 5-cent pieces and how many pennies make 28 cents?

4. A farmer sold 40 dollars' worth of grain and took his pay in sheep at 5 dollars a head. How many sheep did he receive?.

5. At 5 cents a ride, how many rides can a person have for 35 cents?

6. How many school days are there in 6 weeks, if there are 5 school days in one week?

7. A violet has 5 petals. How many petals are there on 9 violets?

8. At 5 cents a plate, how many plates of ice cream can you buy for 25 cents?

9. How much will 4 5-cent stamps cost. 3? 7? 8? 9? 6?

10. How many yards of paper are there in 9 rolls, if each roll is 5 yards long?

11. What are 7 5-cent pieces worth?

12. If Mary knits 5 rows each day, how many rows can she knit in 3 days? How many in 6 days? In 9 days?

13. At 5 cents apiece, how many blank books can you buy for 25 cents? How many for 35 cents? 45 cents?

Review

A	2	7	4	6	1	8	3	9	5	10
B	14	19	11	17	15	20	12	18	16	13
C	23	25	28	21	24	29	26	30	22	27
D	35	31	37	34	38	33	40	32	39	36
E	47	42	45	48	46	41	49	43	50	44

1. Multiply the numbers in row A by: 2; 3; 4; 5.
2. How many 2's in each number of row: A? B?
3. How many 3's in each number of row: A? B? C?
4. How many 4's in each number of row: A? B? C? D?
5. How many 5's in each number of row: A? B? C? D? E?

1	2	3	4	5	6	7	8	9	10
2									
3							24		
4		12							
5									
6					**Note.** This part should not be filled in now because all of tables 6 to 10 has not yet been presented.				
7									
8	16								
9									
10									

6. Finish the whole table. How many products will there ?

Review Problems

1. My father has a flagpole 18 feet high. How many yards high is it?

2. John and Eddie went out nutting. John gathered 42 nuts, and Eddie 34. How many did both gather?

3. At 5 dollars a pair, how many pairs of shoes can be bought for 43 dollars, and how many dollars will be left over?

4. Sam worked 10 examples, but half of them were wrong. How many were right?

5. How many horses can be shod with 16 horseshoes? With 24? With 32? With 40? With 36?

6. What is the price of 1 drawing book, if 3 are sold for 30 cents?

7. How many bushels are there in 16 pecks? In 20 pecks? In 12 pecks?

8. On a Christmas tree, the children counted 65 pieces of candy. After they had taken off 24 pieces, how many remained on the tree?

9. How much do 2 writing books cost at 8 cents apiece?

10. Willie is now 22 years old. How old was he 10 years ago?

11. If a boy earns 5 dollars a week, how long will it take him to earn 45 dollars?

12. If a pint of molasses costs 4 cents, how many pints can you buy for 20 cents?

13. John must walk 7 blocks to school. How many blocks must he walk both ways?

14. Anna is 9 years old, and her aunt is 3 times as old. How old is her aunt?

15. A farmer has 40 horses and wishes to pasture them in groups of 5. How many fields must he have?

Review Problems

1. Joe put 24 marbles into his 3 pockets, the same number into each. How many did he put into each pocket?

2. In a music band, we counted 9 rows of musicians, 4 in a row. How many musicians were there?

3. Tom had 33 chickens. One morning he found that there were only 31 left. How many were gone?

4. Five children divide 50 nuts equally. How many does each child get?

5. We have 10 fingers on both hands. How many on each hand?

6. At 3 cents each, how many cakes of soap can you buy for 15 cents?

7. John learned 30 new words during the last 5 days, the same number each day. How many did he learn in 1 day?

8. If a tub holds 4 pounds of butter, how many such tubs will be needed for 32 pounds?

9. Out of 56 pupils, only 44 were promoted. How many were not promoted?

10. Henry found 13 chestnuts and gave 2 to each boy he met. To how many boys could he give 2 chestnuts?

11. Harry lives 6 blocks from the schoolhouse. How many blocks does he walk to and from school each day, if he goes home to dinner?

12. How many quart measures can you fill with 17 pints of vinegar, and how many pints will be left over?

13. I have 35 cents in my safe, all 5-cent pieces. How many 5-cent pieces have I?

14. Ben had 60 marbles, and his brother gave him 12 nore. How many marbles did Ben then have?

Review Problems

1. A dressmaker requires 3 yards of cloth for a child's dress. How many such dresses can she make out of 11 yards, and how large a piece will be left over?

2. Of a herd of 61 sheep only 55 came home. How many were missing?

3. Lillie had 40 cherries which she tied into bunches of fives. How many bunches did she make?

4. How many wheels are under 8 wagons?

5. Our horses eat 4 bushels of oats every day. How long can we feed them on 24 bushels?

6. A farmer had 69 geese. Of these he sold 36. How many had he left?

7. A man rode 27 miles and walked 11 miles. How far did he travel?

8. A gardener sells 32 red roses and 15 yellow ones. How many roses does he sell?

9. A First Reader costs 24 cents, and a Second Reader 36 cents. How much do the two readers cost?

10. Jack earns 40 cents by carrying papers, and his brother James 25 cents by shining shoes. How much do both earn?

Make problems about these:

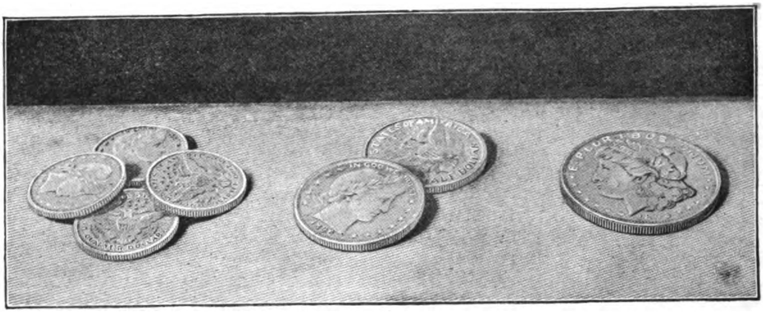
15 + 42 = ?
8 × 4 = ?
9 × 3 = ?
75 + 13 = ?
8 × 2 = ?
100 − 20 = ?

9 × 2 = ?
82 − 11 = ?
30 + 43 = ?
88 − 63 = ?
3 × 8 = ?
20 ÷ 4 = ?

$\frac{1}{4}$ of 28 = ?
$\frac{1}{3}$ of 21 = ?
$\frac{1}{2}$ of 16 = ?
5 pints)25 pints
7 × 5 cents = ?
10 × 5 quarts = ?

MEASURES

United States Money



5 cents (¢) = 1 nickel (n.)
10 cents = 1 dime (d.)
10 dimes = 1 dollar ($)

1. Complete the process:

1 dime = ? ¢
2 dimes = ? ¢
3 dimes = ? ¢
4 dimes = ? ¢
5 dimes = ? ¢
6 dimes = ? ¢
7 dimes = ? ¢
8 dimes = ? ¢
9 dimes = ? ¢
10 dimes = ? ¢

70 cents = ? d.
30 cents = ? d.
80 cents = ? d.
90 cents = ? d.
50 cents = ? d.
10 cents = ? d.
100 cents = ? d.
40 cents = ? d.
20 cents = ? d.
60 cents = ? d.

2 d. + 1 ¢ = ? ¢
2 d. + 2 ¢ = ? ¢
2 d. + 3 ¢ = ? ¢
2 d. + 4 ¢ = ? ¢
3 d. + 4 ¢ = ? ¢
3 d. + 5 ¢ = ? ¢
5 d. + 6 ¢ = ? ¢
5 d. + 7 ¢ = ? ¢
7 d. + 8 ¢ = ? ¢
7 d. + 9 ¢ = ? ¢

United States Money

1. Complete the process:

36 ¢ = ? d. + ? ¢
88 ¢ = ? d. + ? ¢
53 ¢ = ? d. + ? ¢
24 ¢ = ? d. + ? ¢
62 ¢ = ? d. + ? ¢
95 ¢ = ? d. + ? ¢
41 ¢ = ? d. + ? ¢
73 ¢ = ? d. + ? ¢
17 ¢ = ? d. + ? ¢
59 ¢ = ? d. + ? ¢

1 d. = ? n.
2 d. = ? n.
3 d. = ? n.
4 d. = ? n.
5 d. = ? n.
6 d. = ? n.
7 d. = ? n.
8 d. = ? n.
9 d. = ? n.
10 d. = ? n.

10 ¢ = ? n.
20 ¢ = ? n.
50 ¢ = ? n.
40 ¢ = ? n.
70 ¢ = ? n.
80 ¢ = ? n.
60 ¢ = ? n.
30 ¢ = ? n.
90 ¢ = ? n.
100 ¢ = ? n.

1 n. = ? ¢
1 d. + 1 n. = ? ¢
3 d. + 1 n. = ? ¢
7 d. + 1 n. = ? ¢
8 d. + 1 n. = ? ¢
4 d. + 1 n. = ? ¢
6 d. + 1 n. = ? ¢
5 d. + 1 n. = ? ¢
2 d. + 1 n. = ? ¢
9 d. + 1 n. = ? ¢

2. Complete the process:

85 ¢ = ? d. + ? n.
25 ¢ = ? d. + ? n.
65 ¢ = ? d. + ? n.
45 ¢ = ? d. + ? n.
15 ¢ = ? d. + ? n.
35 ¢ = ? d. + ? n.
95 ¢ = ? d. + ? n.
55 ¢ = ? d. + ? n.
75 ¢ = ? d. + ? n.

4 d. + 1 n. + 3 ¢ = ?
2 d. + 1 n. + 2 ¢ = ?
8 d. + 1 n. + 4 ¢ = ?
6 d. + 1 n. + 1 ¢ = ?
9 d. + 1 n. + 3 ¢ = ?
1 d. + 1 n. + 4 ¢ = ?
3 d. + 1 n. + 2 ¢ = ?
5 d. + 1 n. + 2 ¢ = ?
7 d. + 1 n. + 3 ¢ = ?

3 d. + 1 n. + 4 ¢ = ?
6 d. + 1 n. + 2 ¢ = ?
9 d. + 0 n. + 1 ¢ = ?
1 d. + 1 n. + 3 ¢ = ?
4 d. + 1 n. + 2 ¢ = ?
7 d. + 1 n. + 0 ¢ = ?
0 d. + 1 n. + 4 ¢ = ?
8 d. + 0 n. + 3 ¢ = ?
5 d. + 0 n. + 1 ¢ = ?

United States Money

1. How many dimes, nickels, and cents in :
57¢? 39¢? 72¢? 15¢? 98¢? 80¢? 27¢? 66¢? 34¢? 25¢?
83¢? 40¢? 22¢? 95¢? 67¢? 41¢? 13¢? 74¢? 52¢? 63¢?

2. Since one dollar is worth as much as 10 dimes, how many dimes are worth as much as one half dollar? How many cents are worth half a dollar?

3. Since one dollar is worth as much as 20 nickels, how many nickels are worth a quarter of a dollar? How many cents?

4. Complete the process :
2 quarters (qu.) = ? ¢; $1 = ? half dollars (h. d.);
1 h. d. = ? qu.; 3 qu. = ? ¢; $1 = ? qu.; 1 qu. = ? d. + ? n.

5. Complete the process :

1 qu. + 1 d. = ? ¢
1 qu. + 1 n. = ? ¢
1 qu. + 1 d. + 1 n. = ? ¢ *
1 qu. + 2 d. = ? ¢ †
1 qu. + 2 n. = ? ¢
1 qu. + 1 d. + 2 n. = ? ¢
1 qu. + 2 d. + 2 n. = ? ¢
1 qu. + 1 d. + 3 ¢ = ? ¢
1 qu. + 2 d. + 2 ¢ = ? ¢
1 qu. + 1 n. + 4 ¢ = ? ¢
1 h. d. + 1 qu. = ? ¢
1 h. d. + 1 d. + 1 n. = ? ¢
1 h. d. + 3 d. + 1 n. = ? ¢

1 h. d. + 1 qu. + 3 n. = ? ¢
1 h. d. + 2 d. + 2 n. = ? ¢
1 h. d. + 1 n. + 3 ¢ = ? ¢
1 h. d. + 1 qu. + 1 ¢ = ? ¢
1 h. d. + 2 d. + 5 ¢ = ? ¢
1 h. d. + 1 qu. + 1 d. + 4 ¢ = ? ¢
1 qu. + 2 d. + 3 ¢ = ? ¢
3 qu. + 1 d. + 1 n. + 2 ¢ = ? ¢
1 h. d. + 4 d. + 4 ¢ = ? ¢
3 qu. + 2 d. + 1 ¢ = ? ¢
1 h. d. + 3 d. + 1 n. + 3 ¢ = ? ¢
1 qu. + 4 ¢ = ? ¢
1 h. d. + 1 d. + 1 n. + 2 ¢ = ? ¢

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* Say 25¢, 35¢, 40¢.

† Say 25¢, 35¢, 45¢.

United States Money

1. If you had to pay 25¢, what coin could you pay with? Could you pay 25¢ in any other way? How?

2. What coin or coins will pay for 50¢ worth of groceries?

3. How can you pay a bill of 75¢? Of $1?

4. Get change for 10¢. What coins may you bring?

5. Change 25¢; 75¢; $1.

6. What coins will make: 15¢? 20¢? 30¢? 35¢? 40¢? 45¢? 55¢? 60¢? 65¢? 75¢? 80¢? 85¢? 90¢? 95¢? 14¢? 21¢? 32¢? 36¢? 41¢? 47¢? 52¢? 58¢? 63¢? 67¢? 74¢? 77¢? 83¢? 89¢? 91¢? 96¢?

7. If you buy a loaf of bread for 5¢ and pay with a 25-cent piece, how much change should you get? How much more, if you pay with half a dollar? How much more, if you pay with a dollar?

8. If you buy a book for 18¢, how much change should you receive out of 25¢? How much out of a half dollar? How much out of a dollar?

9. How much change should you get out of a quarter, if you pay: 5¢? 10¢? 15¢? 20¢? 8¢? 13¢? 16¢? 19¢? 21¢? 24¢?

10. How much change should you get out of a half dollar, if you pay: 15¢? 20¢? 25¢? 35¢? 40¢? 17¢? 22¢? 33¢? 39¢? 44¢?

11. How much change should you get out of a dollar, if you pay: 10¢? 15¢? 25¢? 35¢? 40¢? 60¢? 65¢? 75¢? 80¢? 85¢? 13¢? 18¢? 27¢? 33¢? 38¢? 46¢? 52¢? 64¢? 86¢? 91¢?

United States Money

1. If you buy 18¢ worth of groceries and give in payment a 25-cent piece, how does the grocer make the change?

Ans. He adds enough to 18¢ to make 25¢, thus: 18, 19, 20, 25; giving you 2 pennies and a nickel.

2. If you buy 34¢ worth of meat and pay with a half dollar, how does the butcher make the change?

Ans. He says: 34, 35, 40, 50.

3. What coins does he give you?

4. If you buy a hat for 65¢ and pay with a dollar, how does the dealer make the change? How much does he give you?

Ans. He says: 65, 70, 75, $1.

In the same way, work the following examples:

5.	**6.**	**7.**	**8.**
12¢+?=25¢	23¢+?=50¢	80¢+?=$1	86¢+?=$1
14¢+?=25¢	27¢+?=50¢	90¢+?=$1	78¢+?=$1
15¢+?=25¢	29¢+?=50¢	75¢+?=$1	83¢+?=$1
17¢+?=25¢	32¢+?=50¢	65¢+?=$1	64¢+?=$1
18¢+?=25¢	38¢+?=50¢	85¢+?=$1	61¢+?=$1
21¢+?=25¢	41¢+?=50¢	45¢+?=$1	58¢+?=$1
23¢+?=25¢	45¢+?=50¢	35¢+?=$1	52¢+?=$1
19¢+?=25¢	48¢+?=50¢	50¢+?=$1	49¢+?=$1
16¢+?=25¢	36¢+?=50¢	40¢+?=$1	67¢+?=$1
13¢+?=25¢	40¢+?=50¢	55¢+?=$1	79¢+?=$1

United States Money

1. I paid 15¢ for a bat and 12¢ for a ball. How much did both cost?

2. I had a dollar and spent 35¢. How much have I left?

3. Elsie has 62¢, and her sister Jennie has 20¢ less. How much has Jennie?

4. A basket of grapes costs 15¢ and a basket of peaches 20¢. How much do both baskets cost?

5. A pound of coffee costs 30¢, and a pound of tea, 60¢. How much cheaper is the coffee than the tea?

6. A boy earned 25¢ and then bought a box of colored crayons for 12¢. How much money did he have left?

7. On his birthday, Carl got a new cap worth 45¢ and a picture book worth 10¢. How much were both presents worth?

8. A grocer pays 75¢ for a case of pears and sells it for one dollar. How much does he gain?

9. Ella wishes to buy a yard of cloth for 50¢; but she has only 38¢. How much more must she have?

10. I bought 82¢ worth of ribbon and gave one dollar in payment. How much change should I receive?

11. John has 65¢, and his brother James has 22¢ more. How much has James?

12. My sister bought 36¢ worth of calico and a spool of thread for 4¢. How much did she have to pay in all? How much change should she receive out of 50¢?

13. Henry started out with a dollar and when he came home had only 85¢ left. How much did he spend?

14. James had 65¢ in his safe and sold some stamps for 25¢. How much money did he then have?

United States Money

1. Paul and Eddie had 35¢ each. Paul paid Eddie 7¢ out of his money. How much did each then have?

2. A grocer sells two kinds of potatoes, the one at 48¢ a bushel, and the other at 10¢ more a bushel. How much does the better kind cost?

3. Frank broke a window, which he had to replace at a cost of 65¢. If he had just one dollar in his safe, how much had he left after paying for the window?

4. Ruth has 25¢ in her pocket and 42¢ at home. How much money has she in all?

5. My sister bought 55¢ worth of meat. How much change should she get out of a dollar?

6. Fred has 3 dimes, 1 nickel, and 3 pennies. How much money has he?

7. Arthur has a quarter, 2 dimes, a nickel, and a penny. How much is that in all?

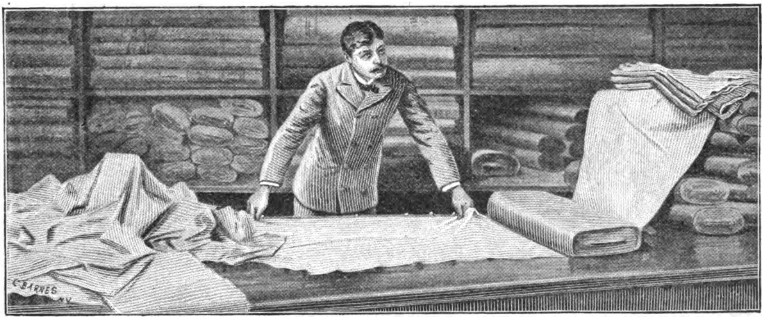
8. If you owe me 50¢ and pay me 35¢, how much do you still owe me?

9. I have 7 dimes and 1 nickel. How much more must I have so that I can buy a pair of skates for one dollar?

10. In the second grade you need the following books: A reader for 36¢, a writing book for 8¢, and a spelling blank for 5¢. What is the cost of all? If your papa gives you half a dollar to buy these books, how much money should you bring home?

11. Lulu buys a pound of coffee for 30¢, a pound of sugar 6¢, a loaf of bread for 8¢, and a pound of cheese for 15¢. much change should she receive out of one dollar?

Long Measure



12 inches (in.) = 1 foot (ft.)
3 feet (ft.) = 1 yard (yd.)

1. How many inches long is your Reader? How wide?

2. What is the length of your pencil box? Of your penholder? Of your hand?

3. How many inches make 1 ft.? 2 ft.? 3 ft.? 4 ft.? 5 ft.? 6 ft.? 7 ft.? 8 ft.?

4. How much longer than one foot is your desk?

5. How many inches long is your desk? How wide?

6. Measure the length of your teacher's desk.

7. How many inches in 1 ft. 3 in.? 2 ft. 6 in.?

8. How many feet and how many inches in: 14 in.? 16 in.? 19 in.? 21 in.? 15 in.? 20 in.? 27 in.? 30 in.?

9. Draw a line one foot long upon the blackboard.

10. Below that line draw a line one yard long.

11. How many feet are there in 2 yards? 3 yards? 4 yd.? 5 yd.? 6 yd.? 7 yd.? 8 yd.? 9 yd.? 10 yd.?

12. Find the length, in yards, of your schoolroom. Also its width.

Long Measure

1. Measure the height and width of the doors, windows, and blackboards in your room.

2. How many feet are there in: 2 yd. 2 ft.? 6 yd. 1 ft.? 4 yd. 2 ft.? 3 yd. 2 ft.? 10 yd. 1 ft.? 12 yd. 2 ft.?

3. Change to yards and feet: 4 ft.; 7 ft.; 10 ft.; 16 ft.; 20 ft.; 26 ft.; 28 ft.; 29 ft.

4. Draw an oblong 8 in. long and 4 in. wide. What is the length of the two long sides taken together?

5. What is the length of the two short sides taken together?

6. How much longer is a long side than a short one?

7. What is the length of two unequal sides taken together?

8. How many inches is it all around the oblong?

9. On the blackboard draw an oblong 2 ft. 8 in. long and 1 ft. 6 in. wide. Answer questions similar to those in examples 4 to 8.

10. Answer similar questions about an oblong 5 ft. 3 in. by 3 ft. 5 in.

11. Answer similar questions about a dining room 6 yd. 2 ft. by 4 yd. 1 ft.

12. Answer similar questions about your schoolroom.

13. From a piece of ribbon 2 ft. long cut off 2 in. How much is left?

14. From a pole 12 yd. long 4 yd. 2 ft. were sawed off. w long was the remaining piece?

Long Measure

1. From a piece of cloth containing 10 yd. cut off 2 yd. How much is left?

2. If you cut off 2 yd. 1 ft. from the cloth of Ex. 1, how much will be left?

3. One pole is 3 yd. high, another only 2 yd. 1 ft. How much higher is the former?

4. How much is $\frac{1}{3}$ of a yard? $\frac{1}{3}$ of 2 yards?

5. How much is $\frac{1}{2}$ of a foot? $\frac{1}{2}$ of 3 feet?

6. How many inches are there in $\frac{1}{3}$ of a foot? How many inches are there in $\frac{1}{4}$ of a foot? In $\frac{1}{6}$ of a foot?

7. How much is $\frac{1}{2}$ of one yard?

8. How much is $\frac{1}{2}$ of 1 ft. 6 in.?

9. How much is $\frac{1}{3}$ of 1 ft.? $\frac{1}{3}$ of 2 ft.?

10. What part of one yard is one foot?

11. What part of one foot are 6 in.? 3 in.? 4 in.?

12. Compare 6 in. with 1 ft. 6 in. With 2 ft.

13. What part of 2 ft. is half a foot?

14. Compare one yard with 6 in.; with 1 ft. 6 in.

15. John is 4 ft. 2 in. tall. How many more inches must he grow so as to measure 5 ft.?

16. A piece of board is 6 ft. long. How long a piece must be sawed off, so that 5 ft. 8 in. are left?

17. If a piece of cloth 3 yd. long is divided into two equal parts, how long will each part be? How many feet and how many inches long?

18. How many 2-in. strips can you cut from a piece of paper 1 ft. 6 in. wide?

Dry Measure

2 pints (pt.) = 1 quart (qt.)
8 quarts (qt.) = 1 peck (pk.)
4 pecks (pk.) = 1 bushel (bu.)

1. Name some things that are sold by the bushel. By the peck. By the quart and pint.

2. Complete the process: 1 qt. = ? pt.; 6 qt. = ? pt.; 8 qt. = ? pt.

3. 1 pt. is what part of a quart? 1 pt. is what part of 2 qt.?

4. Complete the process: 1 bu. = ? pk.; 5 bu. = ? pk.; 9 bu. = ? pk.

5. Complete the process: 1 pk. = ? qt.; 4 pk. = ? qt.; 5 pk. = ? qt.

6. 4 qt. = what part of 1 peck? 2 qt. = what part of 1 peck?

7. 1 pk. = what part of 1 bushel? 2 pk. = what part of 1 bu.? 2 pk. = what part of 2 bu.?

8. How much less than 1 bushel is 1 peck? How much less than 2 bushels are 2 pecks?

9. Complete the process: $\frac{1}{2}$ of 3 bu. = ? $\frac{1}{2}$ of 5 bu. = ? $\frac{1}{2}$ of 9 bu. = ?

Dry Measure

1. How much is $\frac{1}{4}$ of 1 bu.? $\frac{1}{4}$ of 2 bu.? $\frac{1}{4}$ of 3 bu.?

2. How many peck baskets can you fill with a bushel of apples? With 3 bu.? With 5 bu.?

3. How many half-peck baskets can you fill with 2 bushels of apples?

4. At 28 ¢ a bu., how much will 2 pk. of corn cost?

5. At 30 ¢ a bu., how much will 3 bu. of oats cost?

6. A quart of green peas costs 12 ¢. What was the cost of 1 pt.? Of 3 pt.?

7. I paid 12 ¢ for 2 qt. of hickory nuts. How much is that a pint?

8. A peck of potatoes is sold for 20 ¢. How much does 1 bushel cost?

9. At $1 a bushel, how much are 2 pecks of apples worth? 1 peck?

10. A farmer sold 2 bu. of barley for 80 ¢. At that price, how much did half a bushel cost?

11. Cranberries cost 80 ¢ a peck. How much will 4 quarts cost?

12. If a quart of beans costs 4 ¢, how much will half a peck cost? 1 peck?

13. Mixed pickles are sold at 10 ¢ a quart. How much does 1 pint cost?

14. If you pay 3 ¢ for a pint of peanuts, how much must you pay for 2 quarts?

15. I ordered one peck of cherries, but received only 6 quarts. How much was lacking?

16. A grocer has 3 pecks of plums left in his store, and receives 9 pecks more. How many bushels of plums will he then have?

Weight

16 ounces (oz.) = 1 pound (lb.)

1. How many ounces in half a pound? How many in a quarter of a pound?

2. At 30¢ a pound, how much will 3 pounds of coffee cost?

3. How much does half a pound of tea cost at 80¢ a pound?

4. How much are 10 lb. of sugar worth at 5¢ a lb.?

5. If a pound of steak costs 14¢, how much will 2 lb. cost?

6. What is the cost of 4 oz. of cloves at 12¢ a lb.?

7. If 8 oz. of pepper cost 6¢, how much will 2 lb. cost?

8. If nutmegs cost 2¢ an ounce, how much will half a pound cost? A whole pound?

9. An ounce of perfume is sold for 25¢. How much does a 4-oz. bottle cost?

10. At 8¢ per pound, how much will 8 oz. of starch cost?

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49

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